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# LIVE ATTENUATED POLIOVACCINE*

## A REVIEW

R. TURNER, M.B., CH.B., D.P.H., *Senior Pathologist, Cape Town, and Adviser in Pathology to the Union Health Department*

### INTRODUCTION

An immense amount of research into the nature and epidemiology of poliomyelitis has been carried out during the last 30 or so years. This followed the discovery that poliomyelitis is due to infection with a specific virus and that a condition similar to that of paralytic poliomyelitis in man may be induced in monkeys by inoculation of their central nervous system with infective material. As a result of this research it soon became evident to many that the only hope of effectively controlling the disease lay in the development of an efficient vaccine.

Attempts were made by Brodie in 1934 and Kolmer in 1935 to prepare a poliovaccine, similar to that of rabies vaccine. They used suspensions of infected monkey nervous tissue in which the virus particles had been inactivated by chemical agents. It was not until 1949, however, when Enders *et al.*[1] published their studies on the artificial growth of poliovirus in high titre on monkey kidney-tissue culture, that the production of poliovaccine became a reasonably feasible proposition. This discovery was of fundamental importance in the development of poliovaccine. Also of basic importance was the work of Bodian *et al.*[2] who showed that there were 3 distinct immunological types of poliovirus. The Typing Committee of the National Foundation of Infantile Paralysis of the USA then proved that, although there were numerous strains of poliovirus which differed greatly in their virulent properties, each strain belonged to one or other of the 3 types. This work made it clear that any effective vaccine would have to be trivalent. It then had to be decided what type of vaccine should be produced — a living attenuated or a dead inactivated vaccine.

On general principles, many authorities believed that the best hope of developing a really effective prophylactic agent against poliomyelitis lay in the production of a live vaccine. Live poliovaccine is, however, attended by two possible dangers, viz. (1) the vaccine virus may not be sufficiently attenuated and so may cause paralytic disease in unduly susceptible persons; and (2) the vaccine virus, being excreted from the alimentary tract of those vaccinated, might be passed on to others and, gaining in virulence by such passage, might ultimately produce paralytic disease in them.

At that stage it was obvious that several years of very careful and intensive research would have to be carried out before a live attenuated poliovaccine, the safety of which to the individual and the community could be guaranteed beyond all doubt, could be produced. It thus seemed that the development of a 'dead' vaccine would be the quickest answer to this urgent problem. There could be little doubt of the safety of such a vaccine, though there might be doubt as to its probable efficacy.

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### SALK VACCINE

Salk then developed his formalin-inactivated vaccine. This was soon conclusively proved, by the now famous large-scale field trials carried out in the USA during 1954, not only to be safe but to be 60 - 70% effective in preventing paralytic poliomyelitis. Following the report by Francis[3,4] of these trials, a mass vaccination campaign was immediately started in America. However, this campaign soon experienced a very serious setback due to a number of paralytic cases unexpectedly occurring among vaccinated people. These were later proved to be due to contamination of some of the batches of vaccine with live virulent virus. An immediate official investigation was carried out and it was shown that the method of inactivation of the vaccine virus was not foolproof, as was first thought, and that the safety tests which had been used were inadequate.

After more stringent control of the processing of the vaccine had been introduced and more elaborate safety tests enforced, a mass vaccination campaign again slowly proceeded. Since then many millions of children have been successfully inoculated with Salk vaccine throughout the world and the vaccine has proved to be the safest and most innocuous vaccine in routine use today. Moreover, its potency has been so improved that a 90% immunity to paralysis may be expected after 3 or more properly-spaced injections. There can thus be no doubt whatever about the great success of the Salk vaccine. Inactivated vaccine, however, has its limitations and there are a number of authorities who still believe that the final conquest of poliomyelitis will be achieved by a live vaccine.

### LIVE VACCINE

One of the most important discoveries of the immortal Louis Pasteur was the rationale for the production of live vaccines. These vaccines are composed of living micro-organisms, the virulence of which for a particular species of animal has been attenuated by such means as passage through resistant animals of another species. This attenuation causes them to lose their ability to produce serious disease in the original animal species but allows them to retain their ability to provoke a protective immunity. Infection with such attenuated micro-organisms induces subclinical disease, so that the organisms multiply in the tissues and, by sustained antigenic stimulation, produce an effective immunity in a natural way. Thus it is that the most efficient viral vaccines are smallpox and yellow-fever vaccines, both of which are composed of living attenuated organisms. As natural immunity to paralytic poliomyelitis, which lasts throughout life, is normally acquired by subclinical infection with wild strains, there is every theoretical hope that live poliovaccine will produce a relatively solid and lasting immunity.

*Early Research*

Because of the great promise offered by a living poliovaccine, certain research workers of vision have devoted

all their efforts towards the development of such a vaccine and have refused to be deviated from their task by the apparently great success of the 'dead' vaccine. Foremost among these workers has been Koprowski. In the late 1940s[5] he attenuated selected strains of poliovirus by serial passage through rodents. By inoculation of the central nervous system of monkeys with these virus strains he proved that they had become attenuated, in that their ability to produce progressive lesions in the monkeys was greatly diminished. Such biological tests on monkeys, though they have certain obvious defects, are still the best laboratory means of distinguishing between virulent and avirulent strains. Eventually, feeling confident that his attenuated strains had lost their ability to cause paralytic disease in Man, he fed a suspension of infected cotton-rat brain to a 6-year-old boy. This was in February 1950, and it is the first recorded case of the use of live polio-vaccine in Man. The boy developed an intestinal infection with the virus but showed no signs of disease and gradually produced specific neutralizing antibodies in his blood. The experiment, therefore, appeared to be successful and soon 20 subjects were fed vaccine without any ill effects.

Since these initial and most important experiments by Koprowski, an immense amount of research on live polio-vaccine has been carried out by him and by other workers. Other methods of attenuating poliovirus have been developed, such as the adaptation of certain strains to the developing chick embryo. Tissue culture has been of the greatest help in studying and propagating various strains, and the plaque technique of Dulbecco,[6] whereby the progeny of individual virus particles may be isolated, has proved invaluable in the selection and purification of strains.

Many of the strains selected have had to be discarded because, on monkey test, they have proved to be insufficiently avirulent. Others, again, have had to be discarded because, though they have been proved to be avirulent, they have also lost some of their important specific antigenic properties.

*Later Research*

As a result of much meticulous and time-consuming laboratory work and intensely studied small-scale experiments on humans in closed communities, confidence was soon obtained in the safety of several live poliovaccines. This enabled the Expert Committee on Poliomyelitis of the World Health Organization to advise in 1957 that a stage of development in these vaccines had now been reached where large-scale studies on humans were justified in those countries where suitable epidemiological conditions prevailed.

## MAIN LIVE-VACCINE STRAINS

Three different sets of carefully selected attenuated strains were then used for large-scale experiments, viz. (1) the Koprowski strains, (2) the Cox strains, and (3) the Sabin strains. Each of these strains has been named after its originator.

These 3 sets of strains, though all regarded as safe and antigenically potent, have shown considerable differences in their neurovirulent properties as tested in monkeys. The Sabin strains have, however, been shown consistently by such tests to be the most avirulent.

### 1. Koprowski Strains

The first large-scale experiments with live poliovaccine were conducted with the Chat (Type I) strain of Koprowski in the Belgian Congo, commencing in 1957.[7] By early 1959 some 46,000 African children under the age of 5 years had been vaccinated in Leopoldville. The vaccine used appeared to be perfectly safe in that it caused no cases of paralytic poliomyelitis or other complications among the vaccinated subjects or their contacts. The immunity response, as shown by the development of specific antibodies in the serum of the vaccinated children, was, however, somewhat disappointing. Only about 60% gave positive reactions as compared with 90 - 95% obtained in studies with the Chat strain elsewhere. This partial failure was attributed to interference with the vaccine by other enterovirus infections which are common in children living in a tropical and unhygienic environment. When a poliomyelitis epidemic occurred in Leopoldville shortly after the vaccination campaign had commenced, the vaccine appeared to have proved of definite protective value. Of 99 paralytic cases with 4 deaths in this epidemic, 89 cases occurred in non-vaccinated children. However, it has been considered that the numbers involved were too small to allow of a proper statistical evaluation. This experience in the Congo strongly suggests that the live-virus vaccine used was of definite protective value. Also, there was no evidence to indicate that the vaccine was unsafe either for the individual or the community.

Live-virus vaccine composed of Koprowski strains has also been employed in Poland.[8] This vaccine was used only on a small number of subjects in 1958 but since 1959 it has been employed on a mass scale, so that nearly a million children were vaccinated by the end of the year. Only Types I and III strains were used and no Type II. The results appeared to be most promising, but a detailed report of the efficacy and safety of live poliovirus as used in Poland is still awaited.

More recently a report has been published by Pagnano *et al.*[9] on the routine use of live-virus vaccine composed of all 3 types of the Koprowski strains. This was given to 850 normal children, aged from 1½ months to 6 years. They were mainly Negroes, from a low-income group, living in Philadelphia, USA. One, 2 or 3 types of vaccine were fed at monthly intervals. Of the children under 6 months of age, 91 - 100% had a significant antibody response and, in children over 6 months, who had no antibodies before vaccination, there was a significant rise in titre in 84 - 100%. Serologically, therefore, the vaccine was efficacious; it also appeared to be safe in that no case of poliomyelitis occurred in a vaccinated child or in his household.

Thus the evidence available concerning the Koprowski strains is that they are safe and effective for use in live-virus vaccine but the results of the mass trials in Poland must be awaited before a final opinion is given. Perhaps these strains will prove as safe as, and possibly more effective than, the Sabin strains.

### 2. Cox Strains

The Cox strains of poliovirus have been used in live vaccine on a large scale in recent years in Latin America (Colombia, Nicaragua and Costa Rica).[10] In these countries different programmes have been followed. In some cases monovalent feedings of all 3 types have been given separately at intervals of 3 - 4 weeks, while in other cases trivalent vaccine has been fed either once only, or twice at an interval of 8 weeks between doses. In Colombia, among 7,000 children who were fed with 3 successive doses of the 3 types of vaccine, 91% responded serologically to Type I, 72% to Type II and 87% to Type III, while those with antibodies showed a booster effect from the vaccine. Serologically, therefore, the vaccine appeared to be efficacious.

In Nicaragua vaccine was fed to children during a Type II epidemic and it appeared to be of value in preventing paralytic cases. In Costa Rica, where the vaccine was used during an epidemic, the attack rates among the vaccinated and non-vaccinated were 7 and 100 per 100,000 of population respectively.

Thus in the Latin American countries the Cox type of vaccine appears to have been effective, though there is little information about its safety.

Cox vaccine was recently used in large-scale field trials in Florida, USA, and it was learnt at the Copenhagen congress, that, though the incidence of paralytic poliomyelitis had decreased in Florida during the last 5 years, several unexpected cases had occurred in young adults in association with this trial. The development of paralytic complications does not depend solely on the virulence of the invading virus but also on the susceptibility of the host. It appears that the person who reaches early adult age without having acquired an immunity is the one most likely to suffer nervous-system lesions after a poliomyelitis infection. The question, therefore, arises whether the cases were due to the vaccine virus and, if so, whether this virus had gained an enhanced virulence by passage through the vaccinated children.

It was also reported at the congress that Cox trivalent vaccine had recently been used in West Berlin in the face of an epidemic. Over 250,000 children, representing about half the preschool children of the city, had been fed the vaccine. Following this, 34 cases of poliomyelitis were notified of which 23 were in the vaccinated children. Were any of these cases due to the vaccine?

It may well be that none of the cases occurring in Florida or West Berlin were due to the attenuated-vaccine virus but that all were due to virulent wild strains, i.e. the infections were purely coincidental with the vaccine campaigns. Whenever vaccinations are carried out there is always the possibility of coincidental infections occurring. This is inevitably so if there is a contemporaneous epidemic. These incidents in Florida and West Berlin cannot, however, be ignored. The problem of safety can only be solved by extensive epidemiological investigations which include elaborate laboratory studies. An answer to these important questions must, therefore, be postponed until such investigations have been completed and reported in detail.

### 3. Sabin Strains

The Sabin strains were developed by Dr. A. B. Sabin of the University of Cincinnati, USA and, as previously mentioned, have proved to be the most avirulent on monkey testing of the 3 sets of live-virus strains used in present-day live poliovaccine production. Laboratory evidence, therefore, suggests that they should be the safest strains for the preparation of vaccines.

After intensively studied small-scale experiments on humans in the USA and the USSR, the USSR Ministry of Health, being impressed by the harmlessness and efficacy of these Sabin strains as shown by these experiments, authorized their use in large-scale experiments with live virus vaccine in the republics of the USSR during 1959.[8] Starting with the Republic of Estonia where there had been a recent epidemic, some 15 million persons under the age of 20 years were soon fed with the vaccine. So successful did this experiment prove that it was decided in future to abandon Salk vaccine and to switch over completely to live vaccine. Thus, during the first half of 1960, another 60 million persons were fed this vaccine in Russia, as well as several million persons in Eastern European countries.

Live virus composed of Sabin strains has also been used in Mexico and in Singapore.

At the Fifth International Poliomyelitis Congress held in Copenhagen (26 - 28 July 1960) detailed reports of all these experiences with Sabin-type vaccine were given.

*Russian Trials*

In the Russian trials there was no control group as in the American field trials of 1954 with Salk vaccine. The Russian campaign was a mass one and the vaccinations were purely voluntary. The response of the population was remarkably good. Serological surveys, to determine the prevaccination immunity of the population, were carried out and an effective surveillance programme was put into operation. In Tashkent the vaccine was given in the face of an epidemic. The vaccine was administered in a liquid form or in candy and it was shown that the candy kept well at 4°C. for more than a month. Six different schedules of feeding were used by the Russians.[11] The Sabin-recommended schedule of first feeding Type I, then Type III and finally Type II at monthly intervals appeared to be superior to feeding trivalent vaccine. A schedule of Type I followed by Types II and III and then by Types I, II and III, so that each person received 2 feedings of each type, appeared to give the best results. However, if vaccine was given at monthly intervals, the difference between the different schedules appeared to be negligible. If a poliomyelitis epidemic is imminent 2 feedings of trivalent vaccine are probably best. With shortened intervals between feedings the viruses tended to interfere with each other and, in particular, Type II interfered with the 'takes' of the other types. Because of occasional interference by other enteroviruses, it is also thought advisable to carry out feedings during the winter months.

In their experience the Russians[12] claimed that the vaccine proved to be completely harmless and to have shown no reversion to a virulent state. They noted no local or systemic reactions to the vaccine and they claimed that the epidemiological effectiveness of the live Sabin vaccine substantially exceeded that of Salk vaccine. Unfortunately, since there was no control group, the incidence of paralytic poliomyelitis in vaccinated and unvaccinated persons could not be compared. The overall incidence of the disease, however, in comparison with the incidence over the last 5 years, showed a dramatic fall. The serological responses compared favourably with those obtained by Salk vaccine. One month after feeding, $\frac{3}{4}$ - $\frac{4}{4}$ of those vaccinated developed antibodies, and this proportion became even higher after 3 months.

The Russian delegates to the Copenhagen congress also stressed the cheapness of the vaccine and the great ease with which a mass campaign employing live-virus vaccine could be rapidly carried out.

By means of compulsory vaccination of all the population at risk under strict government supervision, the Ministry of Health hopes to eliminate the reservoir of wild pathogenic strains in Russia and so liquidate the disease.

Sabin was in close liaison with the Russian Ministry of Health during the trials and appeared to be much impressed by the efficiency with which the campaign was carried out.

Dr. D. Horstmann,[8] Associate Professor of Preventive Medicine and Pediatrics of Yale University School of Medicine, USA, visited Russia, Poland and Czechoslovakia in 1959 in agreement with the ministries of health of these countries and on behalf of the WHO, to evaluate the results of these vaccination programmes. She states in her report that surveillance in Russia was very efficient and she considered that, under the system adopted, it was most unlikely that any paralytic cases were missed. She concluded that the attenuated live vaccines used in these large-scale experiments appeared to have been safe both for the individual and the community. She also felt that the fall in the incidence of paralytic poliomyelitis indicated that the vaccine was effective though, because of the absence of controls, it was difficult to gauge its effectiveness accurately.

*Singapore Trials*

At the congress, Hale[13] reported on his Singapore experience. In 1958 there was a Type I epidemic in this city. He fed 50% of the population at risk, some 200,000 children between the ages of 3 months and 10 years, with live vaccine composed of Sabin Type II strain only. The object of this was to be able to distinguish clearly between paralytic cases due to the epidemic Type I strain and any Type II cases which might have been caused by the vaccine. No cases of Type I paralysis occurred in the vaccinated children between the 8th and the 34th day after feeding. This experiment showed how a harmless intestinal infection by Type II avirulent virus prevented Type I infection from occurring. This was due to the phenomenon of interference, i.e. the Type II virus blocked the receptors and so prevented a Type I infection establishing itself. He concluded that, because of mutual interference between enteroviruses, it is obviously desirable to conduct vaccination campaigns with live poliovirus at times of the year when infection with enteroviruses is minimal.

*Mexican Trials*

An account was also given at the congress of laboratory and field experience with Sabin strains in 4 Mexican cities.[14] It was noted that interference with other enteroviruses occurred again leading to a certain failure rate. Nevertheless, serological tests on paired sera indicated that the strains

used were highly immunogenic and that the conversion rate for Type I was 84%, Type II, 81% and Type III, 73%. In Mexico City only 17% of the children at risk were immunized and in Guadalajara, 30%.

These proportions were too small to influence the dissemination of wild paralytogenic strains. To banish paralytic poliomyelitis in a community it was calculated that at least 80% of the susceptible population should be vaccinated in the shortest possible time.

In Monterrey and Puebla it was noted that there was a striking difference between the number of expected cases and the number of observed cases in the vaccinated children. This indicated that the vaccine was effective, though conditions did not allow the effective rate to be statistically calculated.

Finally Dr. Sabin[15] gave an inspiring account of the effect of rapid mass immunization of the population of Toluca, Mexico, with live oral vaccine under conditions in which massive enteric infection with other viruses was prevalent. Because of prevailing hygienic conditions in Toluca, all children acquired an immunity at a relatively early age by natural infection with circulating wild viruses. But this was at a cost of many paralytic cases a year. Sabin, in 2 feedings separated by an interval of 6 - 8 weeks, fed all children under 5 years in Toluca with trivalent vaccine. Paralytic cases were brought to a dramatic end. He had artificially produced a herd immunity in a few months which would normally take as many years to acquire by natural means. Later he showed that almost all polioviruses, tame and wild strains, had disappeared from Toluca. The reservoir for poliomyelitis was thus eliminated, and poliomyelitis had been banished from the city by this mass campaign. What has been done in Toluca can be done elsewhere. Sabin stressed that in future in Toluca it would be necessary to immunize all infants below the age of 6 months because they would now have little or no opportunity of acquiring infection by natural means.

Thus it may be concluded that more than 60 million Russians have proved the safety and efficacy of attenuated live poliovaccine composed of Sabin strains, and the city of Toluca has clearly indicated how poliomyelitis may be totally vanquished.

### INACTIVATED *versus* LIVE ATTENUATED POLIOVACCINE

Inactivated Salk poliovaccine has proved to be a great success. It is a safe and innocuous vaccine and its use has substantially reduced the incidence of paralytic poliomyelitis. The immunity produced after a full and properly spaced course of treatment with this vaccine is, however, relative, in that it reduces the incidence of paralysis at best by only 80 - 90%.

Live poliovaccine causes a temporary but harmless infection similar to that of the natural disease and, therefore, it is to be hoped that the resultant immunity will be more solid and lasting than that of the Salk vaccine.

Inactivated poliovaccine prevents paralytic complications after infection by stimulating the production of circulating antibodies which intercept the virus particles in their passage in the blood stream from the intestinal tract to the central nervous system. This vaccine does not, however, prevent intestinal infection occurring. Therefore, it does not interfere with the natural circulation of polioviruses in the community or reduce the reservoir of infection.

The live vaccine causes a temporary intestinal infection which lasts for several weeks and which not only stimulates the production of circulating antibodies but, as shown by many workers, also induces a local intestinal resistance so that the subject cannot be reinfected. As the polioviruses normally exist only in the gastro-intestinal tract of Man, mass vaccination of all susceptible members of a community with live vaccine must eliminate the reservoir of infection. That poliovirus may thus be banished has been proved by the experience of Toluca, Mexico. Live poliovaccine not only protects the individual from poliomyelitis infection but, when mass vaccination is carried out, it also protects him and the community by preventing infections from being acquired. This is obviously a matter of great public-health importance. To achieve total banishment of polioviruses from a community, it has been estimated that at least 80% of the population at risk should be successfully immunized with live vaccine, as previously mentioned. This is a practical proposition that may readily be achieved.

Because passively transferred antibodies from the mother neutralize the circulating antigens, it has not been found practical to immunize infants effectively below the age of 6 months with inactivated vaccine. Such infants, however, may be successfully immunized with live vaccine.

A good immunity to paralytic poliomyelitis takes several months to achieve with present-day inactivated vaccine, but protection from poliomyelitis infection may be obtained in little more than a week by use of a live vaccine. Thus an epidemic may be rapidly aborted by the prompt use of such a vaccine.

An annoying disadvantage of any parenterally administered agent is the occurrence of allergic complications. Inactivated vaccine is given by injection and, although the Salk vaccine is almost a pure aqueous suspension of formalinized virus particles, it may contain traces of antibiotics or monkey-kidney protein from the culture media in which the virus was grown. On occasion, these substances may induce allergic reactions in sensitized persons. As live poliovirus is fed by mouth, these complications should be eliminated by its use.

In all public-health measures to be applied on a large scale, economic questions are of great importance. Here live poliovaccine has the advantage over the inactivated form in that it is much cheaper to produce. Because the potency of the inactivated vaccine used up to this time has not been as high as desired and because several injections must be given to obtain a good immune response, attempts have been made to produce a more concentrated form of the vaccine. These attempts have been successful and concentrated vaccine which gives a satisfactory antibody response after only 2 injections has been experimentally produced.[16] Salk himself,[17] at the recent Copenhagen congress, optimistically prophesied that it may be possible to produce so highly potent a concentrated vaccine in the near future that only 1 injection would be necessary to produce an adequate immunity. A concentrated vaccine must be purified to eliminate possible serious contamination with monkey-kidney protein or other undesirable antigenic materials, which may accumulate in the concentrated vaccine in significant amounts. It is thus to be expected that concentration and purification of these new inactivated vaccines will add considerably to the cost of their production.

Inactivated vaccine must at present be administered by a series of injections, whereas the live virus is simply fed to children in the form of a syrup or candy — a far cheaper procedure and one which should allow of far easier coverage of the population. True, the live vaccine

must be kept continuously at low temperature until immediately before its administration; otherwise it may rapidly lose potency. This means that it must be transported packed with dry ice in suitably insulated containers and then stored at low temperature until used. It is best stored in a 'deep-freeze' but may be stored in the freezing compartment of a domestic refrigerator for up to a month without undue loss of potency. These difficulties in the transportation and storage of live poliovaccine may make it impractical for private medical practitioners to deal with individual cases. Periodic mass vaccination campaigns, carried out by public-health authorities, can readily overcome all these difficulties.

There is no danger today of inactivated vaccine, which has been properly processed and subjected to routine safety tests, being contaminated with live micro-organisms. Micro-organisms which may contaminate live vaccine can also be readily excluded and their absence proved by suitable testing. Special difficulties, however, arise in respect of 2 contaminants, viz. (1) poliovirus particles of enhanced virulence, and (2) 'simian agents'.

It is most important that the final vaccine should contain no virus particles that differ from the original attenuated strains. Before any batch of vaccine is issued it is, therefore, necessary to carry out elaborate biological tests on an adequate number of monkeys to ensure that it is composed only of attenuated poliovirus particles. Recently, tests based on genetic markers have also been elaborated to differentiate between virulent and avirulent strains, but the exact value of these tests is still to be accurately determined.

'Simian agents' are viruses of monkey origin which are frequently found as contaminants in monkey-kidney tissue cultures and, therefore, are extremely difficult to keep out of poliovaccines. Their presence in cell cultures used for the preparation of inactivated virus is of no real consequence, since they are 'killed' in the processing, but there has been doubt as to their significance in cultures used to prepare live vaccine. These agents have been fairly extensively studied in recent years and, though not fully classified, most of them appear to be quite harmless and incapable of causing disease in Man or experimental animals. Theoretically they should be excluded from live poliovaccine but whether it is necessary or practical to do so is a matter of some doubt. Certainly some of the live vaccines employed in Russia and elsewhere were contaminated with one or other of these agents and no ill-effects were observed in the many millions vaccinated. The question of excluding them from vaccine may thus appear to be more of academic than practical interest. Furthermore, any remote danger is minimized by the fact that the vaccine is given by mouth and not by injection. As was pointed out in Copenhagen, if the great Jenner had been hampered in his work by all sorts of remote theoretical considerations, many years would have elapsed before smallpox vaccine was put into practical use and countless more people would have died unnecessarily of this foul disease as the result of such delay. Thus, though every endeavour should be made to exclude contamination of live poliovaccine with these agents, their possible presence in the vaccine may not prove to be of any real consequence.

Inactivated vaccine affects only the individual to whom it is administered, but live poliovaccine is excreted for several weeks in the stools of those vaccinated and so may be passed on to others. From an epidemiological study of live virus in a small community, Paul[18] was struck by the great ease and speed of intrafamily spread of the vaccine virus; he also found evidence to show that extra-family spread occurred. The use of live poliovaccine represents a radical departure from previous orthodox practice in preventive medicine in that the vaccine becomes spread beyond the original vaccinated population. In this way others become involuntarily infected and immunized.

Some authorities consider that this is an added advantage in that it keeps the vaccine virus circulating in family and small social groups until all susceptible members become infected and immunized. Others see something immoral in this involuntary vaccination of persons. To let a tame strain of virus loose in a community in competition with wild and virulent strains and so diminish the hazards of normal natural immunization, which may lead to death or the permanent crippling of children, cannot be reasonably looked upon as an immoral procedure in this modern age. The main fear that the vaccine virus may gain significantly in virulence in its passage from person to person, and so become a danger to the community, seems to have been completely negated by the experience gained in more than 60 million Russian subjects and several million other children in whom the Sabin strains were used.

It will thus appear clear that live poliovaccine composed of Sabin strains, and probably Koprowski strains, is safe and effective and offers many advantages, from a public health point of view, over inactivated poliovaccine.

## THE POSITION IN SOUTH AFRICA

### *Inactivated Poliovaccine*

Following the serious postwar epidemic of poliomyelitis in South Africa, a large sum of money was raised by generous public subscription to establish a National Foundation to fight poliomyelitis. This money was invested in the South African Poliomyelitis Research Foundation laboratories at Rietfontein, under the directorship of Dr. James Gear, with the main objective of developing a vaccine against poliomyelitis. The result is that South Africa is one of the leading countries in the world in this field. Thus, when the famous field trials of 1954 were being conducted in the USA, the South African Poliomyelitis Research Foundation laboratories had already prepared a large amount of inactivated poliovaccine. This vaccine was made available shortly after its release in America so that South Africa was one of the first countries to have ample stocks of vaccine and was able to launch a vaccination campaign well before many of the most important countries of Europe. South African inactivated poliovaccine proved to be a great success — it was safe and no accidents were recorded. Its potency as judged by laboratory tests and serological assays in susceptible children, compared most favourably with that of any vaccine produced elsewhere. This vaccine has been responsible for a great reduction in the incidence of paralytic poliomyelitis in South Africa.

*Live Poliovaccine*

The South African Poliomyelitis Research Foundation laboratories have also been to the fore in the production of live attenuated poliovaccine, composed of Sabin strains. Several million doses have been produced and subjected to all the recommended laboratory safety tests with success. With the permission of the Colonial Office of Great Britain, 200,000 doses of this vaccine have recently been used in Mauritius to combat a poliomyelitis epidemic there. Unfortunately the vaccine was administered only towards the end of the epidemic so that its efficacy cannot be fairly judged. It was, however, proved safe, since no significant ill-effects occurred. More than a million doses of this vaccine have also been used recently in Kenya; again without any reported ill-effects, but also too recently to judge its efficacy. As, however, it is composed of Sabin strains, there is every reason to believe that it will prove as efficacious as this type of vaccine has proved elsewhere. Two million doses of this vaccine have now been released by the Minister of Health for use in South Africa. This is being done on the recommendation of the Public Health Virological Advisory Committee which is perfectly satisfied as to the safety of the vaccine. This recommendation of the South African Committee is given added confidence by the fact that, within a few days of its making its recommendation, the Federal Public Health Department of the USA authorized the release of live poliovaccine, of Sabin strains only, in the USA.

The first batch being released in South Africa is monovalent Type I vaccine because the most likely type to cause any cases of poliomyelitis this summer is this one. By using this vaccine now it is hoped to prevent paralytic cases in the vaccinated communities. Batches composed of the other types will be released later for use next winter. It is recommended that all Europeans up to the age of 30 years and all non-Europeans up to school-leaving age be fed with this vaccine whether or not they have received previous inoculations with inactivated vaccine. The racial differentiation is made because serological evidence indicates clearly that non-European children acquire a natural immunity at a much earlier age than do the European.

The public money invested in the South African Poliomyelitis Research Foundation is thus about to pay another handsome dividend to the country. Once again this Foundation has proved that it is an institution of which South Africa can be justly proud.

## CONCLUSIONS

The development of live poliovaccine marks another important milestone in the continual advance of preventive medicine. Not only does it promise to protect the individual against paralytic poliomyelitis but, employed for the mass vaccination of communities, it also promises to banish poliomyelitis altogether. This question of mass vaccination is most important from a public-health point of view. Langmuir[19] has shown that, in communities in which only part of the susceptible population is adequately vaccinated, although paralytic poliomyelitis is reduced among those vaccinated, outbreaks have become more intense among the unvaccinated. This change for the worse he attributes to some basic change in the ecology of the polioviruses and he thinks that this altered epidemiological pattern may be attributed to the widespread but incomplete use of vaccine. It is, therefore, most desirable, if live poliovaccine is to be employed in the Union of South Africa, that an attempt should be made to immunize all persons at risk throughout the country. With the live vaccine this should be a more feasible proposition than it is with inactivated vaccine.

In certain favoured countries, the bulk of the population at risk has been immunized with inactivated vaccine with very good results. In Denmark[20] it was reported that 99% of the population between 9 months and 14 years had been immunized, 93% between 15 and 19 years, and 85% between 20 and 39 years. As a result, only 10 cases of poliomyelitis were reported in that country last year. It will, therefore, be readily understandable if such countries adopt a conservative attitude towards the use of live poliovaccine. In the countries where virtually everybody at risk has been successfully immunized by inactivated vaccine, there would seem to be little point in suddenly changing horses in midstream and also, perhaps, in wasting large unissued stocks of vaccine.

In South Africa the position is rather different since there is still a large proportion of unimmunized susceptible children — children who may not be readily reached by repeated inoculations with inactivated vaccine but who may be more readily reached by the simpler process of feeding with live vaccine. Most important, however, is the promise that with a mass campaign to cover the whole country, poliomyelitis may finally be banished as smallpox has been banished. In conclusion, it must be stressed that, once we have embarked on this course, there can be no turning back. If polioviruses are banished from the environment, no child will be able in future to acquire a natural immunity by normal and accidental infection. Feeding of all newborn children with live vaccine at the earliest age then becomes essential for, should they grow up without an immunity and the polioviruses return, disaster will inevitably follow.

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VAN DIE REDAKSIE : EDITORIAL

## DIE DIAGNOSE VAN DREIGENDE EN GEWOONTEMISKRAAM

Vaginale bloeding voor die derde trimester van swangerskap is 'n aanduiding van dreigende miskraam. Die groot aantal redes wat aangegee word vir die vroeë beëindiging van swangerskap en die veelvuldigheid van terapeutiese benaderings wat vir die voorkoming daarvan bepleit word, dra almal by tot 'n mate van onsekerheid oor hoe die pasiënt met 'n dreigende miskraam behandel moet word. Die huidige wydverspreide opvatting dat enige vorm van spesifieke behandeling, anders as rus in die bed en kalmering, nie aangewese is nie, dra by tot die gevoel van hulpeloosheid by baie dokters oor hoe om in hierdie saak op te tree. Aangesien daar baie min spesifieke laboratoriumondersoeke is wat ook bydra om die etiologie en diagnose van dreigende miskraam vas te stel, word groot waarde geheg aan kliniese waarnemings by die opstel van 'n plan van behandeling.

Daar is twee belangrike diagnostiese tekens op grond waarvan die uiteindelike verloop van 'n dreigende miskraam voorspel kan word, naamlik bloeding (aard, hoeveelheid, en kleur) en die teenwoordigheid van abdominale pyn.

Bloederige vaginale afskeiding is gewoonlik die eerste gevaarteken en dit kom in ongeveer twintig persent van alle gevalle van swangerskap voor. Trouens, hierdie teken word dikwels deur die pasiënt (en net so dikwels deur die dokter wat nie op sy hoede is nie) vir 'n menstruele periode aangesien. Hierdie soort bloeding is egter nooit net soos die pasiënt se normale menstruele vloeiing nie, wat betref die tyd waarop dit voorkom, die vloeiing self, en die duur daarvan. 'n Onderskeiding moet dus altyd, deur akkurate navraag, gemaak word tussen hierdie abnormale soort bloeding en die normale menstruele periode. Oor die ware oorsaak van die toestand word nog gespekuleer. As die bloeding met helderrooi bloed begin wat later donkerder word, is dit gewoonlik 'n gunstiger teken (met betrekking tot fetale oorlewing) as wanneer die bloeding in die begin donkerbruin is en later helderder rooi word. Hierdie laaste omstandigheid dui gewoonlik 'n swak prognose aan.

In die eerste trimester word pyn gewoonlik voorafgegaan deur bloeding terwyl die omgekeerde die geval is in die tweede trimester. Die aard van die pyn is belangrik. Die soort krampe wat gewoonlik met menstruasie gepaard gaan, sonder bloeding, dui gewoonlik slegs prikkelbaarheid van die uterus aan, terwyl gereelde geboortepyne, wat dikwels hewig is en wat met bloeding gepaard gaan, 'n poging aandui om ontslae te raak van die swangerskap.

Subjektiewe simptome kan ook waardevol wees by die maak van die diagnose en hulle moet dus ondersoek word. Hewige naarheid en braking, in 'n erger graad as wat by vorige swangerskappe voorgekom het, mag die bestaan van 'n trosvormige mola aandui, terwyl 'n skielike verdwyning van hierdie simptome sowel as teerheid van die borste ook bydra om 'n diagnose van dood van die embrio te maak. Die geskiedenis van die aantal miskrame wat 'n pasiënt in die verlede gehad het, sowel as die stadiums waarop hulle voorgekom het, moet nagegaan word. Dreigende miskraam moet onderskei word van toestaande soos anovulêre bloeding, buite-baarmoederlike swangerskap, trosvormige mola, servikale letsels soos kwaadaardige poliepe, en bekkenontsteking. Alhoewel dit vroeër 'n baie omstrede punt was, word dit vandag aanvaar dat dit nodig en selfs noodsaaklik mag wees vir die diagnose om 'n *versigtige* bekkenondersoek te maak en na die serviks te kyk. Dit kan help om die grootte van die uterus en die periode van swangerskap in verband met mekaar te bring en om op dié manier die een of ander van die bogenoemde toestande uit te skakel. Laastens mag 'n röntgenondersoek nodig wees om die fetale dele aan te dui, en kwantitatiewe titers van chorionese gonadotrofien mag aangewese wees.

Vaginale ondersoek (of betasting van die buik as swangerskap reeds ver genoeg gevorder het), wat oor 'n tydperk versprei is om die vergroting van die uterus aan te dui, is dikwels 'n goeie kliniese hulpmiddel by die berekening van die prognose. Die vaginale ondersoek behoort waarskynlik herhaal te word as die simptome bly voortbestaan of as hulle progressief is in terme van vermeerderde bloeding of pyn. Die prosedure moet so versigtig, so sag, en op so 'n steriele moontlike manier uitgevoer word.

Laboratoriumondersoeke speel nie hier 'n groot rol nie. Selfs die positiewe paddatoets mag net lewensvatbaarheid van chorioniese weefsel aandui — die fetus mag alreeds dood wees. 'n Negatiewe toets en simptome wat voortduur mag die noodsaaklikheid vir meer aktiewe behandeling aandui. Die voorkoms van pregnandiol in die urine is moeilik om vas te stel; dit kos duur, die proses is nie orals beskikbaar nie, en die omvang van die normale grense is te wyd om betroubaar te wees. Om op te som sou ons dus kon sê dat ons hier ook maar weer uiteindelik moet steun op ons kliniese waarnemings om 'n basis te vorm vir 'n plan van behandeling.

## MAGNESIUM DEFICIENCY SYNDROME

Experimental hypomagnesaemia has been well studied in animals, but in clinical investigations in man the signs and symptoms of magnesium deficiency have in many reported cases been obscured by the simultaneous presence of other biochemical abnormalities, especially hypocalcaemia. Various signs and symptoms have been reported in patients with hypomagnesaemia, but the syndrome resulting from that deficiency alone does not appear to have hitherto been isolated. The frequent presence of hypocalcaemic tetany in patients showing low plasma levels of both calcium and magnesium, and confusion arising from the use of the term 'tetany' for conditions quite distinct from hypocalcaemic tetany in the description of the symptoms of experimental magnesium deficiency in

animals, have led to a belief that the tetany that is characteristic of calcium deficiency is also caused by hypomagnesaemia. Hanna, Harrison, MacIntyre and Fraser,[1] however, who have recently written on this subject in the *Lancet*, conclude that magnesium deficiency alone does not cause tetany in human subjects, and they do not accept the recently published conclusion of Vallec, Wacker and Ulmer[2] that hypomagnesaemia in man may cause tetany indistinguishable from that due to hypocalcaemia.

The conclusions of Hanna *et al.*[1] are based on three cases at the Hammersmith Hospital, London, in which they have isolated the effects of hypomagnesaemia from those of hypocalcaemia and other biological abnormalities.

The first case (in a man aged 33 years) began with idiopathic steatorrhoea, manifested by pale, soft and bulky motions, about five a day. The diarrhoea persisted for two years, then intestinal obstruction supervened and, after laparotomy, was followed by perforation of the jejunum, for which a second operation was performed a month after the first, and was followed by paralytic ileus lasting six weeks. When the patient had recovered he was put on a gluten-free diet, and shortly afterwards developed severe cramps, vertigo, staggering, and attacks of typical spontaneous tetany. The serum calcium was found to be 3·8 mEq. per litre and the serum potassium 3·0 mEq. per litre. He was treated with calciferol and potassium chloride, and it was not until 15 mg. of oral calciferol a day was given (containing 600,000 units of vitamin D) that the serum-calcium level reached normal values. Although, however, the calcium and potassium levels were now normal the patient was still dizzy and unsteady and showed a positive Chvostek sign. The serum magnesium was therefore investigated; it was found to be 0·20 mEq. per litre (compared with the normal range of 1·50 - 1·80).[1]

The symptoms and signs at this time (attributed solely to the hypomagnesaemia) were as follows: Looked ill and pale. One or two loose motions a day. Weakness. Vertigo on sudden change of position — very marked on lying down. Abdomen distended but no tenderness or palpable masses. Mild symmetrical wasting of muscles of arms and shoulder and pelvic girdles. Muscle tone normal. Somewhat unsteady on walking, but no ataxia when lying down. No sensory disturbances. Tendon reflexes of arms and quadriceps on reinforcement only; Achilles-tendon reflexes absent; abdominal reflexes present; plantar reflexes flexor. No involuntary movements or tremors. Chvostek's sign readily elicited, but Trousseau's test consistently negative after eight months. ECGs showed low voltage and flat T waves.[1]

After twelve days of metabolic investigations the patient suddenly became confused and disorientated, and vomiting and convulsive seizures followed. He was then given an intravenous infusion of 100 mEq. of magnesium chloride in 1 litre of 5% glucose over four hours, after which Chvostek's sign became negative for the first time, the left Achilles-tendon reflex was present, and the voltage of the ECG was increased. The next day a further intravenous 100 mEq. of magnesium chloride was given, when the patient's confusion receded and certain neurological signs developed, which, however, gradually disappeared over the next five days. After these emergency intravenous injections he was put on daily oral (and occasionally intramuscular) magnesium. A marked improvement took place and after a few weeks he was discharged, feeling very well, and still taking supplements of magnesium (200 mEq. in twenty-four hours) and smaller amounts of potassium and calcium, prednisone (10 mg. in twenty-four hours), and a gluten-free diet. On this regime he remained very fit, but when the magnesium supplements were withheld for a week the plasma magnesium fell from 2·0 to 0·9 mEq. per litre, he felt weaker, the diarrhoea became worse, and Chvostek's sign reappeared. He has therefore continued to take the magnesium supplements.[1]

The second case was a woman, aged 58 years, who developed tetany five days after a parathyroid tumour had been removed for hyperparathyroidism with severe bone disease. The tetany was controlled with calcium gluconate, but the patient became depressed, irritable, and resentful of any disturbance. By the eleventh day, while still on calcium therapy, the serum calcium being 4·4 mEq. per litre and the serum magnesium 1·0 mEq. per litre, she suffered from muscular weakness, slight dysarthria and a coarse tremor; the tendon reflexes were normal. She was now given 100 mEq. of intravenous magnesium chloride over four hours and improvement rapidly followed. The mental state improved, she became cheerful and talkative, muscle power increased, the dysarthria and tremor disappeared, and there was a slight increase in ECG voltage. Oral magnesium therapy was continued and the intravenous calcium stopped. Tetany reappeared on the sixteenth postoperative day, when the serum calcium was 3·8 mEq. per litre and the serum magnesium 2·0 mEq. per litre.

The third case, a woman, aged 38 years, was admitted to hospital in a semi-comatose state after a urinary infection with renal failure. Because of osteomalacia she was taking oral calciferol in doses of 100,000 - 600,000 units a day. She was treated with antibiotics, blood transfusion, and intravenous sodium lactate, and her condition improved for six days, when a generalized epileptiform convulsion occurred. The Chvostek sign was then positive and the tendon reflexes were all sluggish. The serum electrolytes were: magnesium 0·9 mEq. per litre, sodium 143, potassium 5·3, $CO_2$ content 27, and calcium 4·7, and the urea was 130 mg. per 100 ml. An ECG showed low voltages. At the end of an infusion of 50 mEq. of magnesium chloride given over four hours the patient was more cheerful and felt better and stronger, the Chvostek sign was negative, and the ECG showed an increase in voltage; eight hours after the infusion the serum electrolytes were: magnesium 2·0 mEq. per litre, sodium 133, $CO_2$ content 24, and calcium 6·6, and the urea was 120 mg. per 100 ml.[1]

The authors[1] conclude from these cases that magnesium deficiency gives rise to a syndrome which may include the following features: A positive Chvostek test with a negative Trousseau test, a low-voltage ECG, epileptiform convulsions, and possibly depression, vertigo, ataxia, and muscular weakness. In the three cases, all these features were rapidly restored to normal by correction of the magnesium deficiency. The authors[1] point out that this clinical picture is very different from that usually ascribed to hypomagnesaemia, and they lay stress on the fact that

tetany does not occur except in the presence of concurrent hypocalcaemia.

As features that cause magnesium deficiency the authors suggest (1) the impairment of the intestinal absorption of magnesium caused by a high intake of calcium, and (2) renal leakage of magnesium resulting from damage to the tubular reabsorptive system of the kidney. It has been found in animals that magnesium absorption by the gut varies inversely with the calcium intake,[3,4] and it has been postulated that there is a common transport system for the intestinal absorption of these two divalent cations and also a common renal reabsorptive system.[1] In the first case the steatorrhoea also probably impaired intestinal absorption of magnesium, and in the second case magnesium deficiency was probably promoted by increased bone avidity for magnesium resulting from the removal of the parathyroid tumour.[1]

This study by Hanna *et al.* of the syndrome caused by magnesium deficiency in the absence of hypocalcaemia calls attention to a field hitherto overlooked in the diagnosis and treatment of electrolyte deficiences.

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# THE PROBLEM OF POSTOPERATIVE HAEMATOMA OF THE SCROTUM

## AN IMPROVED METHOD OF DRAINAGE OF THE SCROTUM AFTER OPERATION

L. HUMAN, M.B., CH.B. (PRET.), F.R.C.S. (EDIN.), *formerly, Department of Surgery, West London Hospital and Medical School*

Postoperative scrotal swelling due to a haematoma is notoriously common after operations on the scrotum, especially those for hydrocele. This leads to prolonged hospitalization and discomfort for the patient because of slow resolution and/or infection of the haematoma. Prophylaxis is the best method of dealing with this problem. Many methods have been used, none of which is entirely satisfactory. Complete haemostasis at operation is still the most important factor. Attempts have been made to support the scrotum in a variety of ways: (1) a 'T' bandage, direct pressure preventing oozing in the scrotum; (2) a suspensory bandage or support by an 'elastoplast' bridge between the thighs: (3) direct pressure by a carefully applied crêpe bandage, or by encasing the scrotum in plaster-of-Paris (Burkitt); and (4) suture to the anterior abdominal wall combined with pressure from wool and a 'T' bandage (Croot).

Drainage is not used by those surgeons who believe that infection may result through the open channel. Most surgeons, however, advise that the scrotum should be drained after operation. This can be accomplished by incising the skin at its most dependent part and by using either a corrugated, round, or glove drain; continuous suction has been tried without much success.

The technique to be described, which I have employed in about 20 cases, is that of button-hole drainage in the lowest part of the scrotum. In these cases there has been no trouble from postoperative swelling of the scrotum.

### OPERATIVE TECHNIQUE

In the operation for hydrocele, a vertical scrotal incision is used and the various layers are incised and retracted using small Allis tissue-forceps. Identification of the cremaster muscle fibres leaves the internal spermatic fascia to be incised. The tunica vaginalis is identified by its pearly appearance. Then a plane of dissection is found, in the non-fibrotic case, between the internal spermatic fascia and the hydrocele sac. The sac is punctured and emptied, if large, then delivered through the scrotal incision and opened with a pair of scissors, the edges being held in forceps. After examination of the testis and epididymis the tunica is excised, leaving a narrow cuff round the testicle. Jaboulay's operation (eversion of the sac) is not favoured because of the bulk of the tunica remaining in the scrotum. Care must be exercised not to damage the epididymis during this excision. Every bleeding point is now secured and the cut edge of the tunica is oversewn with a continuous suture of No. 00 chromic catgut on an atraumatic needle, with an occasional lock stitch. Haemostasis must be complete. The testicle is then replaced in the scrotum.

Next, a 2 cm. incision is made in the most dependent part of the scrotum, the edges being separated and everted by 2

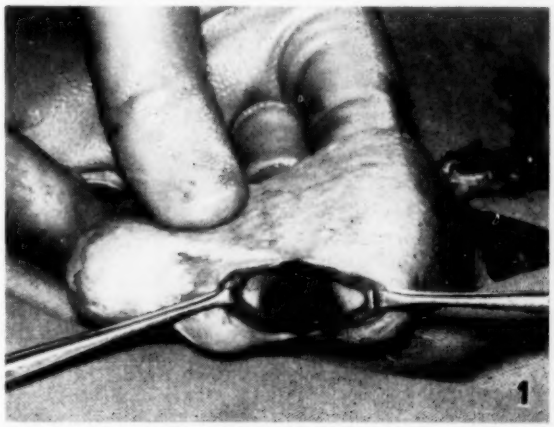


*Fig. 1.* This shows the incision in the bottom of the scrotum which is stretched between index and middle fingers. The edges are separated and everted by 2 Allis tissue-forceps.

small Allis tissue-forceps (Fig. 1) and the cut edges of all the coverings of the scrotum, including the skin, oversewn with 2 continuous plain catgut sutures — 1 for each half of the opening. Bleeding points are controlled. A corrugated rubber drain is then inserted to a depth of 3 cm. and fixed to the skin with a silk stitch. The scrotal incision is closed, after approximation of the dartos muscle and the other layers, with a continuous chromic catgut suture, and the skin with interrupted mattress sutures of silk, everting the edges.

A dry dressing is applied, and the area is supported with wool and a 'T' bandage. The drain is removed after 48 hours and the button-hole stitch is cut and pulled out. The scrotum is then supported in a suspensory bandage. The sutures are removed on the 7th day, and the patient is discharged the next day.

### DISCUSSION

In the scrotum, the testis and tunica are covered by the

following definite and identifiable layers: superficial fascia, which is devoid of fat and contains the dartos muscle, an involuntary muscle whose tonic contraction gives rise to the peculiar rugosity of the scrotum; external spermatic fascia; cremasteric muscle and fascia; and internal spermatic fascia.

On incising the scrotum, it is at once seen how quickly these loose coverings extrude into the opening, thereby preventing adequate drainage. In addition, contraction of the dartos and cremaster muscles tends to constrict such an opening. The internal opening of a drainage tube with or without continuous suction is easily blocked in this way, rendering drainage ineffective. I believe that it should be possible to prevent this interference with drainage by use of the button-hole opening.

The method has been used successfully in 20 cases including hydrocele, cysts of the epididymis, epididymectomy, and orchidectomy. The average hospital stay has been 8 days compared to an average stay of 12·7 days in 44 similar cases which were treated during the past 2 years with the usual methods of drainage.

The drainage opening heals well. One small sinus, giving rise to a slight discharge for a week after leaving hospital, occurred in only 1 case. Here the button-hole suture had not been removed on the 3rd day.

SUMMARY

A new technique for postoperative drainage of the scrotum is described. The average stay in hospital was 8 days, compared to 12·7 days in cases treated by other methods during the previous 2 years.

No postoperative scrotal haematoma has occurred in the cases reported.

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## *Unusual Cases*

# FEMALE URETHRA USED FOR INTERCOURSE

G. P. CHARLEWOOD, F.R.C.S. (EDIN.), F.R.C.O.G., *Coronation Hospital, Johannesburg*

A Bantu patient, aged 29, was admitted to the Bridgman Hospital, Johannesburg, in March 1958, where she had what was thought to be a normal confinement. During labour it was found to be very difficult to assess the dilatation of the cervix, presumably because the examining finger was in the urethra and not in the vagina.

Two weeks later it was found that faeces was leaking *per vaginam* from a rectovaginal fistula just behind the perineal body. The urethra admitted 2 fingers easily and the patient stated that this was the orifice which she used for coitus. The vagina was found to be a very narrow orifice which would not admit a little finger. The rectovaginal fistula was repaired successfully at Coronation Hospital.

The patient gave a history of being unable to hold her urine for about half an hour after intercourse.

COMMENT

It is surprising that a normal female urethra can be dilated sufficiently for intercourse and yet remain continent. I found only 1 previous reference to a urethra having been used for intercourse.[1] This patient remained sterile, which is to be expected. My patient must be considered fortunate to have become pregnant at all, and it is surprising that labour should have been comparatively uneventful through her narrow vagina. Since the patient was perfectly happy as she was, no attempt was made to dilate the narrow vagina.

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*Fig. 1.* Appearance of patulous urethra. A probe is seen in the vagina.

*Fig. 2.* A gloved finger shown in the urethra with a probe in the vagina.

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### CONGRESS SUB-COMMITTEES

*Accommodation*: Dr. J. C. Coetzee (convener)
*Brochure and Publications Committee*: Dr. A. H. Tonkin and Mr. M. J. de Kock (conveners)
*Entertainments Committee*: Mr. R. D. H. Baigrie (convener)
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*Ladies' Committee*: Mrs. V. Ferreira (convener) and Mrs. J. P. Roux (secretary)
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*Scientific Exhibits Committee*: Dr. H. O. Hofmeyr (convener), Drs. T. J. Dry and C. L. Wicht (joint secretaries), Drs. W. P. U. Jackson and H. Muller (members)
*Students' Committee*: Prof. B. Bromilow-Downing (convener)
*Medical and Surgical Products Exhibits Committee*: Mr. M. J. de Kock and Dr. A. H. Tonkin (conveners)
*Transport Committee*: Mrs. J. D. Joubert (convener)

### SCIENTIFIC SECTIONS

The following sections have been formed for the scientific meetings, and the office bearers are as follows:

*Anaesthetics:*
Chairman: Dr. R. A. Moore Dyke, Port Elizabeth
Vice-Chairman: Dr. H. V. Hankins, East London
Secretary: Dr. P. A. Foster, Cape Town

*Dermatology and Venereology:*
Chairman: Dr. C. K. O'Malley, Cape Town
Vice-Chairman: Dr. J. Walker, Durban
Secretary: Dr. S. Stein, Cape Town

*General Practice:*
Chairman: Dr. L. O. Vercueil, Maraisburg, Tvl.
Vice-Chairman: Dr. A. G. Blyth, Ladismith, Cape
Secretary: Dr. F. E. Hofmeyr, Cape Town

*Hospital Administration:*
Chairman: Dr. J. G. Steyn, East London
Vice-Chairman: Dr. J. G. Burger, Cape Town
Secretary: Dr. K. H. Field, Cape Town

*Industrial and Military Medicine:*
Chairman: Dr. W. Waks, Pretoria
Vice-Chairman: Dr. B. Serebro, Johannesburg
Secretary: Dr. R. C. van der Merwe, Cape Town

*Medicine:*
Chairman: Dr. N. A. Rossiter, Durban
Vice-Chairman: Dr. P. Leftwich, Cape Town
Secretary: Dr. A. Swanepoel, Cape Town

*Obstetrics and Gynaecology:*
Chairman: Dr. P. Connan, Bloemfontein
Vice-Chairman: Dr. F. Daubenton, Jnr., Durban
Secretary: Dr. P. F. M. du Toit, Cape Town

*Ophthalmology:*
Chairman: Dr. N. L. Murray, Pretoria
Vice-Chairman: Dr. E. T. Meyer, Johannesburg
Secretary: Dr. S. Sacks, Cape Town

*Orthopaedic Surgery:*
Chairman: Mr. A. Lewer Allen, Durban
Vice-Chairman: Mr. G. F. Dommisse, Pretoria
Secretary: Mr. M. Singer, Cape Town

*Otorhinolaryngology:*
Chairman: Dr. L. E. Lane, Port Elizabeth

Vice-Chairman: Dr. J. H. Casewell, Pretoria
Secretary: Dr. D. V. Maytham, Cape Town

*Paediatrics:*
Chairman: Dr. F. P. Walt, Durban
Vice-Chairman: Dr. E. Fasser, Pretoria
Secretary: Dr. R. F. Maggs, Cape Town

*Pathology:*
Chairman: Dr. D. Ordman, Johannesburg
Vice-Chairman: Prof H. W. Weber, Cape Town
Secretary: Dr. C. E. Watson, Cape Town

*Physical Medicine:*
Chairman: Dr. C. Adler, Johannesburg
Vice-Chairman: Dr. C. W. Coplans, Cape Town
Secretary: Dr. H. T. van Diggelen, Cape Town

*Psychiatry, Neurology and Neurosurgery:*
Chairman: Mr. K. Lewer Allen, Johannesburg
Vice-Chairman: Dr. R. W. S. Cheetham, Durban
Secretary: Dr. J. S. du T. de Wet, Cape Town

*Public Health:*
Chairman: Dr. R. J. Smit, Cape Town
Vice-Chairman: Dr. A. Stephen, Durban
Secretary: Dr. J. L. J. van Rensburg, Cape Town

*Radiology:*
Chairman: Dr. J. Muir Grieve, Cape Town
Vice-Chairman: Dr. T. Fichardt, Pretoria
Secretary: Dr. J. A. Beyers, Cape Town

*Surgery:*
Chairman: Mr. W. Kark, Johannesburg
Vice-Chairman: Mr. R. Lane Forsyth, Cape Town
Secretary: Mr. J. E. Gasson, Cape Town

*Thoracic Surgery:*
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Vice-Chairman: Mr. P. E. Marchand, Johannesburg
Secretary: Mr. G. S. Muller Botha, Cape Town

*Urology:*
Chairman: Mr. D. R. Barnes, Cape Town
Vice-Chairman: Mr. C. D. Kisner, Johannesburg
Secretary: Mr. P. J. M. Retief, Cape Town

### PLENARY SESSIONS

The number of plenary sessions to be held and the subjects and speakers will be announced later.

### MEETINGS OF SECTIONS AND GROUPS

As far as possible these meetings will be combined. Facilities will be provided for Groups to hold their Annual Meetings.

**Members wishing to read papers at the Congress are requested to communicate with the secretary of the section concerned as soon as possible. This will greatly facilitate the work of the Scientific Committee in arranging for Combined Sectional Meetings and will expedite the publication of details of programmes. For this purpose all that is required at this stage is the *title of the paper*.**

*Note*: All sectional secretaries can be contacted through the Congress Office.

**The closing dates for the receipt of summaries and completed papers are 1 June and 1 July 1961 respectively. These should be addressed to the Hon. Assistant Organizing Secretary.**

*Regulations and instructions governing the reading of papers at Congress* will be issued to prospective speakers upon receipt of their applications.

Accepted papers will be distributed to members in reneoedbook form according to classification and will be made available to them at a nominal fee at the time of registration.

## HOTEL ACCOMMODATION

Accommodation will be handled exclusively by the South African Railways Travel and Publicity Bureau, who have been appointed the official accommodation agents for Congress. For information in connection with bookings members are asked to contact their local agencies. Applications will be attended to promptly and forwarded to the controlling office in Cape Town. In the event of difficulty kindly contact Dr. J. C. Coetzee, the Convener of the Accommodation Sub-Committee, at the Congress Office, 43rd South African Medical Congress, P.O. Box 643, Cape Town.

## EXHIBITIONS

The following exhibitions will be staged at the University of Cape Town during Congress week:

### SCIENTIFIC EXHIBITS

In the past these proved to be a great success at Congresses. Doctors or university departments interested in exhibiting in this section should communicate with Dr. H. O. Hofmeyr, Congress Office, 43rd South African Medical Congress, P.O. Box 643, Cape Town, and are referred to the notice appearing on page 856 of the issue of the *South African Medical Journal* for 1 October 1960.

### EXHIBITION OF MEDICAL AND SURGICAL PRODUCTS

Arrangements for this exhibition are in the hands of Mr. M. J. de Kock, Business Manager of the Medical Association of South Africa, P.O. Box 643, Cape Town. Telephone 3-5286.

### HOBBIES (ARTS AND CRAFTS) EXHIBITION

Members wishing to exhibit in this section should communicate with Mr. T. Schrire, Congress Office, 43rd South African Medical Congress, P.O. Box 643, Cape Town.

## ENTERTAINMENT

A programme of entertainments is being planned and details will be issued in a later circular. Tickets for entertainments such as the Congress Ball and Banquet are not included in the Registration Fee and will have to be purchased separately.

### CLUBS

Honorary membership of various clubs (sporting and other) in Cape Town and the vicinity is being arranged for members of Congress.

### BROADCASTS

The South African Broadcasting Corporation will reserve time on both the English and Afrikaans programmes for nightly reports on Congress activities.

## TELEVISION

It is expected that one of the highlights of Congress will be closed-circuit colour television of surgical operations to be performed at one or more of the local teaching hospitals and projected for viewing by a full auditorium at Congress. There will be synchronous commentary and discussion by the surgeon and a panel of experts. A well-known pharmaceutical firm has offered to import the unit from overseas at their expense.

## REGISTRATION FEES

Only members of the Medical Association of South Africa are eligible for membership of Congress. The Registration Fee will be R10 (£5), interns wil pay R2 (£1), and registrars R6 (£3).

### LEVY

Members of the Cape Western Branch (M.A.S.A.) are reminded that as hosts they will be approached for a voluntary contribution towards preliminary Congress expenses. All members of the Branch will be expected to contribute, but those attending Congress will be credited with the amount of their contribution as being part of their Registration Fee. The amount to be levied will be circulated to Branch members before 14 February 1961 (decimalization day) when the levy will become due and payable.

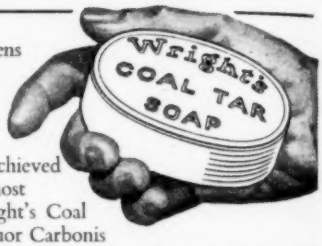
## INTENTION FORM

An Intention Form is supplied on page 982 of this issue of the *Journal*. Please assist the Congress Organizing Committee by completing it *now* and returning it to the undersigned at the above address.

Jacques Roux, M.B., Ch.B., M.R.C.O.G.
*Hon. Organizing Secretary*

**N.B.—Hierdie omsendbrief verskyn op 3 Desember in Afrikaans.**

## When you scrub up . . .

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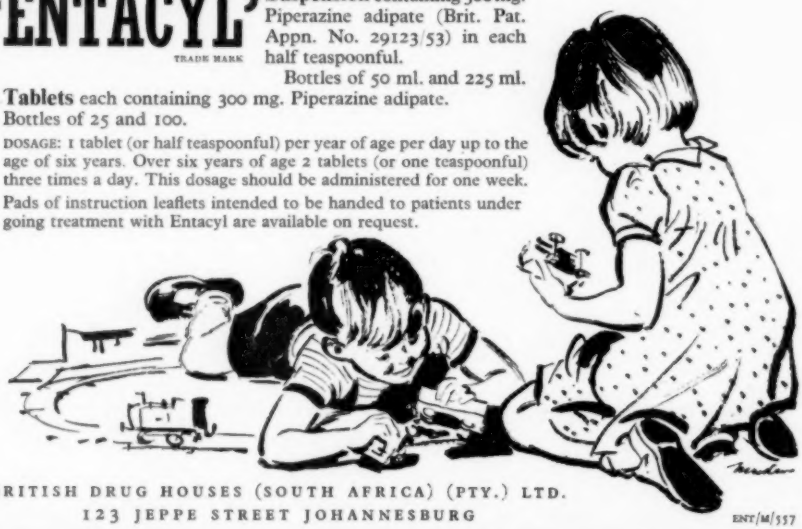

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# BLAASNEKSTENOSE*

J N. DE KLERK, F.R.C.S. (EDIN.), *Departement van Urologie, Karl Bremer-hospitaal, Bellville, Kp.*

Sedert Young[1] se oorspronklike beskrywing van 'n stenotiese letsel aan die blaasnek by die vrou, en sy behandeling daarvan, het daar met tussenposes oor die afgelope 30 jaar bydraes deur verskeie skrywers oor hierdie onderwerp verskyn.[2-11] Nogtans het hierdie verskynsel nog betreklik min aandag geniet en word dit tot op die hede nie as 'n afsonderlike kliniese entiteit in die nuutste urologiese handboeke behandel nie.

Van nog groter belang is die feit dat die vorige skrywers almal 'n duidelike kliniese obstruktiewe beeld geskilder het, wat hulle dan deur middel van dilatering of met transuretrale reseksie herstel het. Myns insiens is daar egter 'n baie groter groep, wat ek as *funksionele blaasnekstenose* beskou, wat nie klinies obstruktief voorkom nie en nie in die literatuur as sodanig beskrywe word nie. Hierdie groep is waarskynlik, in 'n groot persentasie van gevalle, die oorsaak van die sogenaamde vesikalenek-siektebeeld by die vrou — 'n toestand wat die uroloog soveel hoofbrekens kan besorg.

*Etiologie*

Alhoewel nog onbekend, moet ons aanvaar dat daar primêr 'n neurogene en/of miogene afwyking in die normale urineringsmeganisme van die blaas is. Hierdie toestand kan min of meer met die sogenaamde achalasie van die dermholtes vergelyk word. Muellner[12] beskryf die vroulike urineringsmeganisme as die produk van die funksie van die detrusor en interne vesikale sfinkter, die eksterne uretrale sfinkter, die levator ani met die pubokoksigeus en die ander skeletspiere wat aan die ontwikkeling van die intra-abdominale druk deelneem. Muellner en Benjamin[13] beskryf altwee die proses van urinering as 'n afwaartse verplasing van die blaas deur die intra-abdominale drukking met afwaartse trekking van die vesikale nek. Hierdie beweging stimuleer die detrusor om saam te trek. As dit *waar* is, is dit te verstaan dat enige afbreuk in hierdie reeks van funksies wel tot gebrekkige lediging van die blaas kan lei. Ons sal sien, na beskrywing van die kliniese geval, dat dit wel moontlik is dat hier 'n afbreuk op alle gebiede kan wees, aangesien daar in hierdie gevalle ten minste een, of moontlik almal, van die volgende 3 faktore teenwoordig is: (1) Ingewandsversakking, (2) hoë uitmonding van die uretravesikale aansluiting, en (3) duidelike waarneembare verdikking van die gladde spierweefsel in die gebied van die blaasnek.

Ten slotte is dit noodsaaklik om hierdie groep gevalle te onderskei van ander oorsake van blaasnekstenose soos alhier kortliks aangestip:

1. Kongenitale blaasnekstenose — hier het daar 'n stenotiserende verbinding tussen die ‚anlage' van die blaas en die uretra plaasgevind tydens sy ontwikkeling.

2. Na-traumatiese fibrose van die blaasnek en proksimale uretra, dikwels gepaard met geboortebesering en met blaasuitsakking.

3. Inflammatoriese stuwing van die blaasnek, hetsy (a) deur infeksie, of (b) hormonale afwykings in die normale vroulike maandstondsiklus.

4. Ten slotte moet melding gemaak word van die moontlikheid dat aanhoudende stimulering van die kittelaar deur organiese kwale of deur psigoseksuele afwykings, kramp van die vesikale nek kan veroorsaak en moontlik tot die ontwikkeling van hierdie siektebeeld kan lei.

*Simptome*

In die uitgesproke geval van blaasnekstenose, hetsy van watter aard ook al, is die beeld duidelik obstruktief en verskil dit geensins van die gewone simptome wat in die man met prostaatobstruksie gevind word nie. Waar dit wel van die man verskil, is in die nadruk wat die pasiënt op haar simptome lê. Dit is byvoorbeeld baie moeilik om 'n vrou so ver te kry om 'n verandering in haar stroomsterkte, of vermindering in die kaliber van haar stroom, waar te neem. Sy sal baie meer nadruk lê op frekwensie, nokturie, disurie, of die simptome van infeksie soos byvoorbeeld kouekoors of piurie. So 'n pasiënt mag dikwels verwys word deur haar praktisyn met 'n geskiedenis van herhaalde aanvalle van urine-infeksie, sonder dat sy ooit een woord rep oor die feit dat sy moeilik water, en indien die uroloog nie noulettend haar urineringsproses ondersoek nie, is dit maklik om die moontlikheid van 'n blaasnekstenose oor die hoof te sien. Verder is dit ook 'n feit dat die jong dame in haar twintiger jare dikwels oortuig is dat sy 'n normale urinestroom het omdat sy eenvoudig nie van beter weet nie. Urine oponthoud, verswakte stroomkaliber, of onderbroke urinering, mag selfs op direkte ondervraging verswyg word, aangesien die pasiënt dit as 'n dood-normale vorm van urinering beskou. Die meerderheid kla gewoonlik alleen oor een of meer van die volgende: Frekwensie, nokturie, disurie. lae rugpyn, 'n gevoel van onvolledige lediging van die blaas, afwisselende urine-infeksie (hetsy van die niere en/of die blaas, dikwels gepaard met hematurie en aanhoudende irritasie in die gebied van die uretra, of ook gepaard met stimulasie van die kittelaar by gemeenskap). By uitsondering kla hulle oor oponthoud van die urine, onderbroke urinering, vermindering in die kaliber van die stroom, of selfs episodes van akute retensie.

Daar is dikwels bykomende psigosomatiese afwykings soos bv. skeelhoofpyn, dismenoree, of ontlastingsprobleme gepaard met 'n spastiese kolon.

*Tekens*

Die pasiënt is gewoonlik 'n gespanne indiwidu wat van 20 - 40 jaar oud is, ingewandsversakking het, en astenies is.

Buikondersoek mag algeheel negatief wees. Heel weinig is die blaas voel- of klopbaar nadat die pasiënt die blaas sover moontlik geledig het. Dit moet egter met nadruk gesê word dat tekens van gevorderde blaasstuwing, of selfs nierkelkuitsetting, weinig voorkom in hierdie siektebeeld.

Vaginale ondersoek is van belang. Dikwels is daar verbreding en vervlakking van die voorste forniks te sien.

* Lesing gelewer tydens die Derde Jaardag van die Mediese Skool van die Universiteit van Stellenbosch en die Karl Bremer-hospitaal, Bellville, Kp., op 8 - 9 Oktober 1959. Ontvang op 21 Julie 1960.

Die blaasbasis vorm as't ware 'n breë dak vir die vagina, wat waargeneem kan word deur die Sims-spekulum. Dit is moontlik dat daar met tweehandige ondersoek 'n onvolledige lediging van die blaas gevind word.

*Urinering*

Daar is 'n mindere of meerdere mate van oponthoud. Die stroom mag onderbroke en swak van kaliber wees. Nogtans is die pasiënt dikwels in staat om die blaas volkome te ledig. 'n Urineres is die uitsondering en nie die reël nie. Die urine is dikwels helder skoon en sonder selle. Daar kan natuurlik infeksie aanwesig wees, in watter geval daar dan die gewone mikrobeeld van urineinfeksie is.

*Röntgenondersoek*

In die duidelike geval van blaasnekstenose is die röntgenologiese beeld tipies die van enige obstruktiewe letsel van die blaas, nl. daar is balkvorming, selvorming, of daar is divertikels en selfs hidro-ureternefrose. Dit is egter dikwels die geval dat die pasiënt met kwaai simptome geen afwykings van obstruktiewe aard het nie. Alhoewel daar niks tipies van die toestand in hierdie gevalle gevind mag word nie, is dit partykeer moontlik om 'n duidelike verhoging van die blaasnek in die frontale sowel as laterale projeksie te sien (Afbs. 1 en 2).

Urineringsistogramme is egter gewoonlik van geen waarde by die diagnose van hierdie toestand nie. Ons het nie die geleentheid gehad om fluoroskopie toe te pas nie. Moontlik sou dit van waarde wees.

*Instrumentasie*

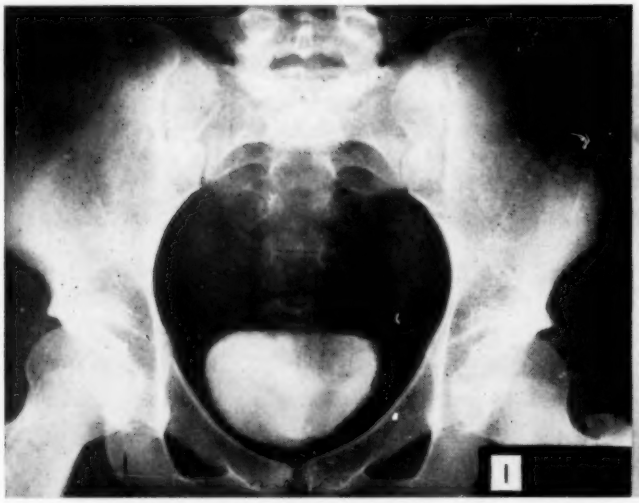
1. *Kateterisering.* Hierdie prosedure moet myns insiens afgeraai word om verskeie redes:

(a) In die meerderheid van die gevalle kan geen begrip gevorm word van die blaasnekstenose nie, en daar sal geen urineres gevind word nie.

(b) Al is daar gevorderde blaasnekstenose met urineres, is dit twyfelagtig of dit raadsaam is om 'n kateter in die blaas te plaas in die primêre stadium van die diagnostiese ondersoek, aangesien dit alleenlik tot besmetting van die blaas kan lei, wat die operatiewe risiko vir so 'n pasiënt heelwat sal vergroot. Kateterisering is net geoorloof indien daar 'n kwaai obstruktiewe letsel is en dit nodig sou wees om die blaas te dreineer alvorens tot operasie oorgegaan word.

2. *Sondering.* Dieselfde argument wat teen kateterisering aangevoer is, is ook hier van toepassing. Dit kan egter gemeld word dat sondering as 'n voor-sistoskopiese prosedure partykeer van waarde is insover dit die teenwoordigheid van 'n striktuur van die anterior uretra kan uitsluit. Dit is ook moontlik om 'n vasklemming van die sonde te voel terwyl die instrument deur die blaasnek gestoot word.

3. *Endoskopie.* Sistoskopiese ondersoek van die blaas met 'n reghoekige lenssisteem mag in die gevorderde geval die gewone eienskappe van blaasnekobstruksie aandui, nl. 'n balkvormige voorkoms, of die aanwesigheid van selle of divertikels, maar dit is nodig om dit hier te benadruk dat hierdie sistoskopiese beeld heeltemal afwesig mag wees. Trouens, dit is so in die meerderheid van gevalle. Die vermoede van blaasnekstenose kan egter verwek word as daar òf 'n mate van trigonale hipertrofie òf 'n duidelike hoë uitloop van die blaas met 'n steiler helling van die blaasnek tot die bas fond teenwoordig is. Hierdie declivis van die trigonum is van besondere diagnostiese belang by die nullipar en die omvang en aard daarvan kan verder ondersoek word deur die basis van die blaas per vagina te ondersoek terwyl die blaas met die sistoskooplig deurlig word. Waar die vermoede van 'n blaasnekstenose deur hierdie bevindings gewek word, is die verdere ondersoek van die blaasnek en proksimale uretra met die panendo-



*Afb. 1.* B.A.P. 25 min. A.P.-beeld. Nullipar, 29 jaar oud. Let op die sistogram — die duidelike verhoging van die blaasnek met 'n vullingsdefek in hierdie gebied teenwoordig. Daar is ook matige tekens van blaasspierverdikking sigbaar.

*Afb. 2.* Ledigingsistogram. Nullipar, 23 jaar oud. Die duidelike beeld van blaasnekstenose, hier sigbaar op skuinsprojeksie, kan gesien word.

skoop van besonder baie belang. Indien 'n goeie ondersoek gedoen moet word, is dit nodig om 'n definitiewe prosedure te volg:

(a) Die blaas word tot die uiterste volgemaak. Die panendoskoop word teruggetrek in die uretra tot heel distaal van die blaasnek. Met goeie stuwing van die blaas is dit dan moontlik om die proksimale gedeelte van die uretra uit te dui en die inbult van die interne vesikale opening waar te neem en die vernouing aldus duidelik vas te stel. Dit is partykeer ook moontlik, indien die letsel ver gevorder het, om die wit fibrotiese weefsel duidelik deur die slymvlies waar te neem.

(b) Origens is dit moontlik om met die panendoskoop die duidelike declivis van die trigonum beter waar te neem en op die verhouding van die uitloop van die blaas tot die blaasholte te let.

## DIAGNOSE

Alhoewel daar natuurlik onder verskillende omstandighede afwykings is in die patroon, kan die klassieke geval van funksionele blaasnekstenose soos volg beskryf word: Die pasiënt is gewoonlik 'n vrou met ingewandsversakking wat emosioneel hoog gespanne is, wat dikwels ander psigosomatiese afwykings het, en wat kla oor afwisselende aanvalle van blaasbesmetting of net disurie. By gewone kliniese ondersoek kan daar gewoonlik geen afwykings van die urine-stelsel vasgestel word nie, en met röntgenologiese sowel as sistoskopiese ondersoek blyk 'n stenose van die blaasnek teenwoordig te wees.

*Differensiële Diagnose*

Afgesien van die ander oorsake van blaasnekstenose wat voorheen in die etiologiese bespreking aangestip is, is daar een toestand wat heelwat moeilikheid kan gee, nl. die blaasuitsakking of sistoseel. Trouens, die vraag is of die bogenoemde soort blaas nie 'n noodsaaklike voorloper is in die ontwikkeling van 'n sistoseel in die multipara nie. Waar daar wel 'n nageboortelike blaasuitsakking teenwoordig is, is dit 'n vraag of die pasiënt nie dikwels ook geassosieerde blaasnekstenose het nie — wat dan vir die teenwoordigheid van aanhoudende urinêre simptome verantwoordelik is, selfs na die volledige herstel van die blaasuitsakking. In die geval waar ginekoloë, wat plisering van die blaasnek as 'n roetine doen tydens 'n kolporafie, kan so 'n stenotiese blaasletsel nog moontlik verder vererger word.

## BEHANDELING

### 1. Konserwatief

Konserwatiewe behandeling word alleenlik aangeraai by dié pasiënte wat om verskeie redes nie in staat is om 'n operasie te ondergaan nie. Die behandeling bestaan daarin dat die uretra met tussenposes gedilateer word, sonder bloeding indien moontlik, tot F29 - 30. Uit die aard van die patologiese afwyking wat hier teenwoordig is, het hierdie soort behandeling net versagtende waarde en, aangesien dit nie 'n blywende resultaat kan lewer nie, verdoem dit die pasiënt tot 'n vonnis van jarelange urologiese behandeling. Dat dit wel verbetering in die gevorderde fibrotiese stenose van die blaasnek bring, is nie te betwyfel nie, maar, aangesien daar selde in die jonger pasiënt gevorderde fibrose teenwoordig is en die stenotiese letsel primêr spasties van geaardheid is, is die resultate dikwels hoogs onbevredigend in die geval van funksionele blaasnekstenose.

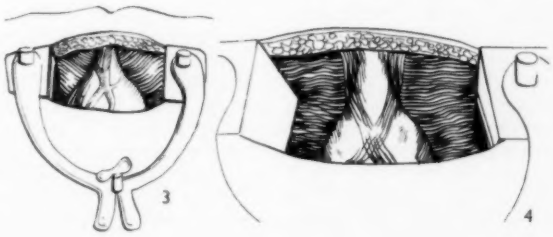
### 2. Operatief

*(a) Transuretrale Reseksie*

Hierdie metode het die nadeel dat dit dikwels tot sekondêre fibrotiese afwykings in die blaasnek lei met herhaling van die oorspronklike probleem; dat dit dikwels nodig is om herhaling van die blaasnekreseksie te doen om 'n suksesvolle resultaat te verkry; dat daar 'n wesenlike gevaar van 'n vesikovaginale fistel bestaan; en dat, indien die reseksie oormatig gedoen word, daar 'n wesenlike gevaar van inkontinensie is. Die grootste argument teen hierdie metode van behandeling is die feit dat dit geen rekonstruksie van die verhouding van die blaas tot die blaasuitmonding veroorsaak nie. Die pasiënt het nog altyd 'n versakte blaas, alhoewel die uitmonding nou 'n bietjie groter is. Om hierdie rede verkies ek:

*(b) Die Bradford-Young Y.V. Plastiek-operasie van die Blaasnek*

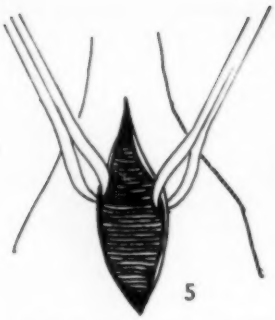
*Metode.* Met die pasiënt in die Trendelenburg-posisie word die anterior wand van die blaas, die blaasnek, en die proksimale uretra blootgelê deur 'n Pfannenstiehl-snit. Die retropubiese, prevesikale vetweefsel word versigtig verwyder met inagneming van die teenwoordigheid van die prevesikale veneuse vatstelsel en, waar nodig, word die veneuse vate afgebind (Afb. 3). Na die




*Afb. 3.* Die posisie van die prevesikale veneuse vatstelsel en hulle verhouding tot die blaasnek is hier voorgestel. Hierdie vate moet sorgvuldig afgebind word voordat enige verdere disseksie in hierdie gebied gedoen word.

*Afb. 4.* Voorstelling van die wyse waarop die pubovesikale ligamente oor die blaasnek ontplooi. Die kruising van die vesels bepaal die mees proksimale gedeelte van die langwerpige dorsale snit in die uretra. Van hierdie punt af word die snit lateraalwaarts na albei kante toe verleng om die Y-snit te voltooi.

blootlegging van hierdie gebied kan die wit glinsterende pubovesikale ligamente gesien word soos hulle na die blaasnek saamdring en dan oor die blaaswand ontplooi (Afb. 4). Die vesel van hierdie ligamente ontplooi oor die middelpunt van die blaasnek en dit is juis hier waar die middelpunt van die snit in die blaasnek gevind moet word. 'n Y-vormige snit word nou in hierdie area gemaak. Die aansluiting tussen die 3 bene van die Y is presies oor die ontplooiing van die pubovesikale ligament. In die praktyk word eers die onderste been van die Y-snit gemaak (1 - 1·5 cm. lank) van die ontplooiing van die ligament af

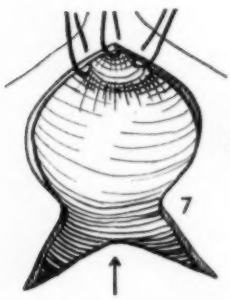


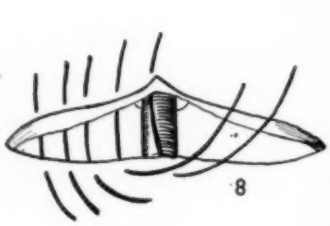
*Afb. 5.* Die eerste vertikale snit oor die gebied van die blaasnek.

*Afb. 6.* Die oopmaak van die vertikale snit om die proksimale gedeelte van die uretra en die blaasnek te ontbloot.

wat distaal in die dorsale aspek van die proksimale uretra is (Afb. 5). Die proksimale gedeelte van die uretraholte word dus blootgelê en die blaasnek kan nou duidelik uitgeken word (Afb. 6). Dit is ook moontlik om op hierdie stadium 'n duidelike verdikking van die gladdespierweefsel van die blaas in die gebied van die blaasnek waar te neem. Bloeding wat in die area voorkom, bestaan gewoonlik uit klein vate wat aan die perifere aspek van die uretrale wand gesien kan word. Dit kan maklik hier geklem en ligtelike gefulgureer word.

Deur middel van 'n katdermhegting met 'n 3/0 kroom, ooglose naald word 3 steke in die mees distale gedeelte van die snit geplaas. Een word in die middellyn en 1 aan albei kante sowat 0·5 cm. van mekaar geplaas. Die steke word vanaf die ureterholte na buite deurgebring en sluit in die uretrale slymvlies en die volle dikte van die uretrale wand. Die hegting word lank gehou en met arterieklemme gevang sonder dat dit gebind word. Die proksimale snitte van die Y word nou voltooi vir sowat 5 cm. in die anterior blaaswand (Afb. 7). Bloeipunte in hierdie snitte lê ook perifeer en kan gefulgureer word.





*Afb. 7.* Die plasing van die 3 distale steke in die verwyderde vertikale snit kan gesien word. Die proksimale verlenging van die snit na albei kante toe is hier ook voorgestel. Die blaasflap wat onder die pyltjie lê, word dan distaalwaarts afgetrek en geheg deur middel van die 3 steke wat voorheen daar geplaas is.

*Afb. 8.* Hegting van die blaaswand word voorgestel na plasing van die Foley-kateter.

'n 18F 5c.c. Foley-kateter word nou vanaf die blaasholte na buite deur die uretra gestoot. Die sak word nie op dié stadium volgemaak nie. Die voorpunt van die V-vormige flap in die anterior blaaswand word nou afgetrek en aan die mees distale gedeelte van die snit in die uretra geheg, deur gebruik te maak van die 3 steke wat alreeds vantevore daar geplaas is. Hierna word die res van die blaaswand op die gewone wyse met dieselfde hegting waterdig gesluit (Afb. 8). Die blaas word uitgespoel en die katetersak volgemaak. 'n Riffeldrein word deur 'n steekwond in die buikwand gestoot na die retropubiese gebied en die buikwond word op die gewone wyse geheg. Die pasiënt word na die saal gestuur met aaneenlopende blaasdreinering wat 'n week lank volgehou word. Hierna word die kateter verwyder.

## KOMPLIKASIES

Komplikasies kom selde voor. Inkontinensie was ook nog nooit 'n faktor gewees in my gevalle nie, maar dit is wel moontlik indien die distale snit in die anterior uretra te ver distaal gemaak word en die uretrale sfinktermeganisme permanent beskadig word. In dié opsig wil ek waarsku dat dit maklik sou wees om die uretrale snit te lank te maak, indien nie opgelet word nie (tydens die optel van die uretra met weefselklemme) dat die neiging is om die uretra proksimaal te trek en die snit in die uretra te ver distaal te sny.

In 'n reeks van 33 gevalle oor die afgelope 3 jaar was daar 1 geval van retropubiese infeksie, wat met dreinering opgeklaar het, en 3 gevalle van hematoomformasie as gevolg van gebrekkige afklemming van die prevesikale veneuse vatstelsel. Een pasiënt het gekla van aanhoudende disurie na operasie en met herondersoek het dit geblyk dat een van die steke in die uretra met urinesoute aangepak het en 'n klein steentjie gevorm het. Na verwydering hiervan het die pasiënt se simptome opgeklaar.

## RESULTATE

Van die 33 gevalle kan 3 as onbevredigend beskou word aangesien met 'n na-operatiewe opvolging na sowat 3 maande daar nog voortdurende urinêre simptome voorgekom het. In hierdie gevalle is by nabetragting, myns insiens, die verkeerde oordeel gebruik in sover daar 'n twyfelagtige mate van stenose was, en die oorsaak van die pasiënt se klagtes dus primêr nie die stenose was nie, maar uretrotrigonitis met buleuse blaasnekstuwing en aanhoudende infeksie in die distale uretra. In 2 van die gevalle was daar ook 'n vaginale ontsteking en na verwydering van hierdie ontsteking het hulle ook van hulle urinêre simptome ontslae geraak. Origens kan die resultate alleenlik as uitstekend beskou word. Dit was opmerklik om die spontane verbasing van die pasiënte te hoor aangaande hulle urineringsvermoë. Sonder uitsondering het almal erken dat hulle nooit besef het wat dit is om ordentlik te urineer nie. Verskeie van hulle het verklaar dat dit eenvoudig 'n plesier was om nou na die toiletkamer te gaan.

## BESPREKING

Alhoewel daar met hierdie operasie geen poging aangewend word om die versakte blaas as sodanig te herstel

nie, en die operasie alleenlik daarop toegespits is om die blaasnekstenose te herstel, is dit myns insiens 'n natuurlike gevolg van die retropubiese operasie dat die blaas na vore gelig en aan die anterior buikwand vasgeheg word deur granuloomvorming en fibrose. Dit is opmerklik by die na-operatiewe ondersoek van hierdie pasiënte se blase dat die duidelike declivis van die trigonum tot 'n groot mate uitgewis is sonder dat daar spesifiek enige herstel hieraan gedoen is. Die fiksering van die blaas in hierdie verhoogde posisie veroorsaak natuurlik ook 'n meer doeltreffende drukking op die vol blaas met verhoging van die intra-abdominale druk. Myns insiens het hierdie operasie sy grootste waarde vir die jong vrou vanaf die twintiger tot die veertiger jare, wat nog 'n volle produktiewe leeftyd voor het en waar 'n mens wil probeer om 'n permanente herstel van die blaasnek te weeg te bring sonder die gevaar van inkontinensie, vesikovaginale fistel, en herhaling van die stenose.

OPSOMMING

Die kliniese beeld van funksionele blaasnekstenose by die jong vrou met aanhoudende urinêre simptome word beskryf. Die etiologie en patogenese word bespreek en die resultaat met die operatiewe herstel van hierdie toestand word weergee.

SUMMARY

Functional bladder-neck stenosis is described and considered as a cause of the so-called 'vesical-neck' syndrome' in the female. The pathological anatomy is described. Thirty-three patients considered to fall into this category were operated on by means of the Bradford-Young Y.V. cystoplasty. Long-term results have been excellent in 90% of these cases.

My opregte dank aan die Superintendent van die Karl Bremer-hospitaal, dr. R. L. M. Kotzé, vir sy verlof om hierdie gevalle te publiseer. My dank aan dr. Roy Allan vir die tekeninge wat hy gemaak het by operasie. Ek wil ook my dank betuig aan dr. Theo Arndt vir sy nougesette voor- en na-operatiewe versorging van hierdie pasiënte.

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## AMPTELIKE AANKONDIGINGS : OFFICIAL ANNOUNCEMENTS

### MEDIESE HULP VAN VERSEKERINGSMAATSKAPPYE

Op sy onlangse vergadering wat in Vereeniging gehou is op 19-21 Oktober 1960 het die Federale Raad van die Mediese Vereniging beraadslaag oor die beleid van die Vereniging in verband met (1) die goedkeuring deur die Vereniging van groepe wat deur versekeringsmaatskappye geadministreer word as mediese hulpverenigings, en (2) die advies wat aan lede gegee moet word insake sekere tjeks waarop 'n kodenommer aandui dat die waarde van die tjek berus op die tarief vir goedgekeurde mediese hulpverenigings, en dat dit ‚aangebied word ter volle vereffening van die bruto bedrag van sulke rekening'. Hierdie tjeks word op die oomblik deur die Suid-Afrikaanse Onderlinge Mediese Hulpvereniging aan mediese praktisyns gestuur.

1. *Goedkeuring van Mediese Hulpgroepe wat deur Versekeringsmaatskappye Geadministreer Word*

In Maart 1960 het die Federale Raad die volgende besluit geneem:

‚(i) Dat die Mediese Vereniging van Suid-Afrika ooreenkom om saam te werk met versekeringsmaatskappye wat vooruitbetaalde mediese sorg daarstel, met die doel om dit vir hulle moontlik te maak om voldoende mediese diens aan die publiek te bied, en

‚(ii) dat die voorkeurtarief soos van tyd tot tyd gewysig word, goedgekeur word ten opsigte van alle groepe wat ook voldoen aan die reëls wat neergelê is vir goedgekeurde mediese hulpverenigings, op die veronderstelling dat die organisasies wat verantwoordelik is vir die administrasie weer op hulle beurt sal onderneem om die rekenings van dokters direk en ten volle te betaal.'

Op sy vergadering in Vereeniging het die Federale Raad die bogenoemde besluit in die lig van onlangse onderhandelings in heroorweging geneem en in hierdie verband soos volg besluit:

‚(i) Dat groepe binne versekeringsmaatskappye erken en goedgekeur word as hulle voldoen aan die reël op grond waarvan hulle verwag word om 'n inkomsteperk te hê, wat nog vasgestel moet word, en sekere ander reëls wat van toepassing is op mediese hulpverenigings.

‚(ii) dat alle versekerde persone van wie die inkomste onder die inkomsteperk is in 'n goedgekeurde groep op hulle eie geplaas word — ten opsigte van wie die versekeringsmaatskappye ooreenkom om die doktersgelde „direk en ten volle" te beetaal op die basis van die tarief vir goedgekeurde mediese hulpverenigings.

‚(iii) dat versekerde persone van wie die inkomste bokant die vasgestelde inkomsteperk is in 'n ander groep geplaas word sodat die versekeringsmaatskappye direk aan hulle die verskuldigde bedrag betaal, en dat hierdie groep deur die dokters as private pasiënte beskou sal word van wie hulle self hulle gelde sal invorder.'

'n Aantal groepe waarna binnekort in die *Tydskrif* verwys sal word, is goedgekeur, maar die Federale Raad het besluit dat geen verdere onderhandelings aangaande groepe met versekeringsmaatskappye onderneem sal word nie, en dat geen verdere groepe erken sal word alvorens 'n bevredigende verstandhouding bereik is tussen die Mediese Vereniging en die versekeringsmaatskappye oor sake wat die waardigheid van die professie raak en oor die betaling van rekenings nie.

2. *Advies Aangaande Gekodifieerde Tjeks*

In 'n amptelike aankondiging wat in die uitgawe van 24 September 1960 van die *Tydskrif* gepubliseer is, het 'n spesiale subkomitee van die Federale Raad wat opdrag gehad het om met verteenwoordigers van die Suid-Afrikaanse Onderlinge Mediese Hulpvereniging te onderhandel oor die kwessie van gekodifieerde tjeks, besluit om die volgende voorlopige advies aan lede van die Vereniging te gee:

Om sover moontlik te probeer om die tjeks te hou en nie 'n voldaan te teken of hulle te deponeer nie voor die volgende vergadering van die Federale Raad. Die subkomitee kon nie anders nie as om hierdie advies te gee nie aangesien verskeie nuwe beginsels deur die besprekings op die voorgrond gekom het — iets wat die hele toestand van sake weer vloeibaar gemaak het.

Nadat alle aspekte van hierdie probleem oorweeg is, het die Federale Raad die volgende besluit geneem:

‚(i) Om lede aan te raai om maar die gekodifieerde tjeks van die Suid-Afrikaanse Onderlinge Mediese Hulpvereniging onder protes aan te neem, tot 30 November 1960.

‚(ii) Voor hierdie datum sal lede in kennis gestel word van die resultate van onderhandelings wat deur die Federale Raad gevoer sal word, ook sal hulle advies kry oor verdere optrede.

‚(iii) Die aandag van lede word daarop gevestig dat daar verneem is dat tjeks wat uitgereik is vir 'n bedrag wat kleiner is as die tariefgelde, per abuis uitgereik is; hulle kan dus aan die afsender teruggestuur word om reggemaak te word.'

Die bogenoemde aanbevelings verwys na tjeks wat uitgereik is ten opsigte van dienste wat gelewer is aan lede van groepe voordat die groepe goedgekeur is. Lede van die Vereniging moet egter die feit in gedagte hou dat 'n aantal groepe nou goedgekeur is. Tjeks wat dus uitgereik word ten opsigte van dienste gelewer aan hierdie goedgekeurde groepe sal dus in orde wees as hulle uitgemaak is teen mediese hulpvereniging tariewe, selfs na 30 November.

Lede van die Vereniging sal op hoogte gehou word van alle nuwe verwikkelings in verband met die saak waarna hierbo verwys is, deur middel van kennisgewings in die *Tydskrif*.

E. W. Turton
*Voorsitter, Federale Raad*

Vereeniging
21 Oktober 1960

## MEDICAL AID SOCIETIES

The following new medical aid societies were approved by Federal Council at its meeting held in Vereeniging on 19 - 21 October 1960. This approval took effect on 1 November 1960:

1. British General Electric Co. (Pty.) Ltd., Medical Aid Society, P.O. Box 9329, Johannesburg.
2. Commercial and Industrial Medical Aid Society, P.O. Box 958, Johannesburg.
3. First Electric Medical Aid Fund, P.O. Box 3961, Johannesburg.
4. Santam Onderlinge Mediese Hulpvereniging, Posbus 653, Kaapstad.
5. S.A. Pulp & Paper Industries Medical Benefit Fund, Tugela Mill, P.O. Mandini, Zululand.

Certain groups administered by the South African Mutual Medical Aid Society and the South African National Sickness and Accident Insurance Company (SANSOM) were also approved. Members of the Association will be informed about these groups as soon as certain formalities have been completed with the insurance schemes.

A complete list of approved medical aid societies, together with the names of the abovementioned approved groups, or with an indication of how practitioners are to recognize whether patients are members of the approved groups or not, will be published in the *Journal* in due course.

L. M. Marchand
*Associate Secretary*

28 Plaza Building
Pretoria
28 October 1960

## MEDIESE HULPVERENIGINGS

Op sy vergadering van 19 - 21 Oktober 1960 in Vereeniging het die Federale Raad die onderstaande nuwe mediese hulpverenigings goedgekeur. Hierdie goedkeuring het in werking getree op 1 November 1960:

1. British General Electric Co. (Pty.) Ltd., Medical Aid Society, P.O. Box 9329, Johannesburg.
2. Commercial and Industrial Medical Aid Society, P.O. Box 958, Johannesburg.
3. First Electric Medical Aid Fund, P.O. Box 3961, Johannesburg.
4. Santam Onderlinge Mediese Hulpvereniging, Posbus 653, Kaapstad.
5. S.A. Pulp & Paper Industries Medical Benefit Fund, Tugela Mill, P.O. Mandini, Zoeloeland.

Sekere groepe wat deur die South African Mutual Medical Aid Society en die Suid-Afrikaanse Nasionale Siekte- en Ongevallemaatskappy (SANSOM) geadministreer word, is ook goedgekeur. Lede van die Vereniging sal ingelig word oor hierdie groepe sodra sekere formaliteite met die versekeringskemas afgehandel is.

'n Volledige lys van goedgekeurde mediese hulpverenigings, tesame met die name van die bogenoemde goedgekeurde groepe, of met 'n aanduiding van hoe geneeshere sal kan weet of pasiënte lede van goedgekeurde groepe is of nie, sal te gelegener tyd in die *Tydskrif* gepubliseer word.

L. M. Marchand
*Medesekretaris*

Plazagebou 28
Pretoria
28 Oktober 1960

## AMPTELIKE VERKLARING DEUR DIE SEKRETARIS VAN GESONDHEID : OFFICIAL STATEMENT BY THE SECRETARY FOR HEALTH

### POLIOMIËLITIS-SLUKENTSTOF

Soos algemeen bekend, is die nuwe tipe lewend-verswakte poliovirusentstof nou tot die beskikking van plaaslike owerhede, en dit is verkrygbaar van die Poliomiëlitis Navorsingstigting. Hierdie entstof is deur die Uniegesondheidsdepartement, na noukeurige oorweging en op aanbeveling van die adviserende komitee insake virologie, vir gebruik goedgekeur. Hierdie komitee beveel aan dat die entstof aanvanklik vir georganiseerde en gekontroleerde inentingsveldtogte deur plaaslike owerhede gebruik word wat vir die gesondheid van die gemeenskap in hul gebiede verantwoordelik is.

Die entstof moet by voorkeur gedurende koel weerstoestande toegedien word, maar om baie gevalle van poliomiëlitis te voorkom wat anders gedurende die daaropvolgende somer sou voorkom, is dit besluit dat dit verstandig sal wees om een dosis van Tipe I entstof hierdie tyd van die jaar toe te dien aangesien hierdie tipe bekend is vir uitgebreide epidemies. Die gebruik van trivalente entstof sal meebring dat daar minder persone sal wees by wie 'n bevredigende graad van immuniteit bewerkstellig sal word, aangesien Tipe II die neiging het om te ‚vat' tot die uitsluiting van Tipe I.

Om aan sy doel te beantwoord om verlammende poliomiëlitis in 'n gemeenskap te voorkom, is dit noodsaaklik dat die entstof aan so 'n groot deel van die vatbare bevolking in so 'n kort tyd as moontlik toegedien word. Gevolglik moet 'n massa-immuniseringsveldtog onderneem word. Om die koordinasie van die veldtog te verseker, is dit nodig dat dit

### ORAL POLIOMYELITIS VACCINE

As is generally well known, the new type of living attenuated poliovirus vaccine is now available to local authorities from the Poliomyelitis Research Foundation. This vaccine has been approved for use by the Union Health Department after careful consideration and on the advice of its Virology Advisory Committee. This Committee recommended that the vaccine be used initially in organized and controlled vaccination campaigns by local authorities who are responsible for the health of the communities in their areas.

The vaccine is best used in the cool weather but, in order to prevent many cases of poliomyelitis which would otherwise occur during the ensuing summer, it has been decided that it would be wise to administer one dose of Type I vaccine at this time of year, since this is the type known to be responsible for extensive epidemics. The use of trivalent vaccine would have the effect of reducing the proportion of individuals in whom a satisfactory degree of immunity is reached, since Type II tends to 'take' to the exclusion of Type I.

To achieve the purpose of preventing paralytic poliomyelitis in a community, it is essential that the vaccine be given to as large a proportion of the susceptible population in as short a

onder die leiding en beheer van die plaaslike owerheid moet wees wat vir die gemeenskap verantwoordelik is. Dit is raadsaam om te verseker dat die allerbeste gebruik van die enigsins beperkte beskikbare voorrade entstof in die kortste moontlike tyd gemaak word.

Daar word gehoop dat private praktisyns die poging wat aangewend word om so veel vatbare persone as moontlik te immuniseer sal ondersteun en dat hulle die ouers in dié verband sal inlig.

Aan alle kinders en jong volwassenes, afgesien daarvan of hulle ten volle of gedeeltelik met die Salk-tipe entstof geïmmuniseer is, of selfs verlammende poliomiëlitis gehad het, behoort die slukentstof gegee te word. In die besonder behoort die slukentstof toegedien te word aan alle blanke Suid-Afrikaners tussen die ouderdom van 6 maande en 30 jaar, en aan immigrante uit Noord Wes-Europa en Noord-Amerika tot op die ouderdom van 40 jaar, wat as gevolg van 'n gebrek aan blootstelling aan vorige immuniserende infeksies, besonder vatbaar is. Nie-blankes doen normaalweg 'n natuurlike immuniteit op terwyl hulle baie jonk is en byna alle volwassenes en selfs ouer kinders is heeltemal immuun en het geen immunisering nodig nie. Gevolglik word immunisering vir hierdie groep aanbeveel tot op die ouderdom wanneer hulle die skool verlaat.

Swangerskap is in geen stadium 'n teenaanwysing vir die gebruik van die entstof nie.

Die entstof moet nie aan persone wat aan 'n akute siekte ly gegee word nie, maar dit mag aan diegene wat aan chroniese infeksies, soos tuberkulose, ly, gegee word.

Aangesien praktisyns huiwerig mag voel aangaande die toediening van die entstof aan persone van wie dit bekend is dat hulle oorgevoelig vir penisillien en ander antibiotika is, kan dit gemeld word dat die slukentstof slegs geringe hoeveelhede van hierdie middels bevat wat geen reaksies behoort te veroorsaak wanneer dit deur die mond geneem word nie.

Hoewel die voorneme is om slegs een dosis van Tipe I entstof in hierdie stadium toe te dien om 'n maksimale graad van immuniteit onder die bevolking te bewerkstellig, is die plan om aan alle persone wat die eerste dosis gekry het twee dosisse van trivalente entstof gedurende die winter toe te dien. Normaalweg is die tussenpose tussen dosisse 2 maande of langer.

Die entstof is op die oomblik in ampules wat 1,000 dosisse bevat, verpak. Dit moet by 'n temperatuur van −10°C tot −20°C geberg word en moet in 'n lae temperatuur tot kort voor gebruik gehou word. Hoewel kleiner verpakkings en selfs verdunnings vir onmiddellike gebruik in die laboratorium moontlik sou wees, moet die verdunde entstof binne 24 uur gebruik word.

Hoewel die entstof nie in die aanvangstadium van massaveldtogte aan private praktisyns uitgereik sal word nie, is die Uniegesondheidsdepartement van voorneme om die mediese professie, insluitende verteenwoordigers van die private praktisyns en ook die mediese gesondheidsbeamptes, te raadpleeg om sodoende die doeltreffendste en uitgebreidste aanwending van hierdie entstof gedurende die komende winter en daaropvolgende jare te verseker.

time as possible. A mass immunization campaign has therefore to be undertaken. To ensure the coordination of the campaign it is necessary that it should be under the direction and control of the local health authority responsible for the community. This is essential to ensure the best possible use of the somewhat limited supplies of the vaccine available in the shortest possible time.

It is hoped that private practitioners will support the efforts being made to immunize as many susceptible individuals as possible and in particular that they will advise parents in this connection.

All children and young adults, whether they have received either a full or a partial course of immunization with the Salk-type vaccine, or whether they have had paralytic poliomyelitis, should be given oral vaccine. More specifically, all White South Africans between the ages of 6 months and 30 years, and immigrants up to the age of 40 from North-Western Europe and North America (who, because of lack of exposure to previous immunizing infections are particularly susceptible) should be given oral vaccine. Non-white persons normally acquire a natural immunity at an early age and almost all adults and even older children are completely immune and do not need immunization. Therefore in these groups immunization is recommended up to school-leaving age.

No stage of pregnancy is a contra-indication to the use of the vaccine. The vaccine should not be given to people who are suffering from an acute illness but it may be given to those with chronic infections, such as tuberculosis.

As practitioners may have some doubt about the administration of the vaccine to persons known to be sensitive to penicillin and other antibiotics, it may be mentioned that the oral vaccine contains only minute amounts of these substances which, when taken by mouth, should not cause reactions.

Although it is intended to administer only one dose of Type I vaccine at this stage, to ensure the maximum degree of immunity of the population, it is planned to give all persons who have received this first dose two doses of trivalent vaccine during next winter to ensure the maximum degree of immunity in the population. Normally, the intervals between doses of vaccine is 2 months or longer.

The vaccine is at present packed in ampoules containing 1,000 doses. It must be stored at a temperature of −10°C to −20°C and be kept at low temperatures until very shortly before use. Although smaller packings and even dilution for immediate use would be possible in the laboratory, the diluted vaccine must be used within 24 hours.

Although the vaccine is not being issued to private practitioners in the initial stages of the mass campaigns, it is the intention of the Union Health Department to consult fully with the medical profession, including representatives of private practitioners as well as medical officers of health, to ensure the most effective and widest use of this vaccine during next winter and in subsequent years.

## MEDIESE VERENIGING VAN SUID-AFRIKA : MEDICAL ASSOCIATION OF SOUTH AFRICA

### ANNUAL GENERAL MEETING

The Annual General Meeting of the Medical Association of South Africa was held in the Union Steel Corporation Recreation Club, Vereeniging, on the morning of 19 October 1960, when Dr. D. S. Chapman was inducted as President of the Association by Dr. P. F. H. Wagner, the retiring President. Dr. Wagner referred to the great services which Dr. Chapman had rendered to the Association and to the public. The appreciation and thanks which he had earned were reflected in his election to this high honour. Dr. Chapman replied suitably.

At the opening of the meeting the minutes of the last Annual General Meeting were confirmed and signed and the annual report and audited accounts adopted.

The meeting was adjourned until 8 p.m. After an address of welcome by the Mayor of Vereeniging, the presentation of the following awards was made: Dr. C. Adler and Dr. D. S. Chapman (bronze medals). After the presentation of the awards, Dr. Chapman delivered his Presidential Address on 'Fifty Years in Vereeniging'.

### FEDERAL COUNCIL

The recently-elected Federal Council of the Medical Association of South Africa held its first meeting in the Union Steel Corporation Recreation Club, Vereeniging, on 19 - 21 October 1960.

At the beginning of the meeting the Secretary, Dr. A. H. Tonkin, asked for nominations for a temporary Chairman. The President of the Association, Dr. D. S. Chapman, was elected. After giving an opportunity to the senior members of the various Branches to introduce new members, Dr. Chapman asked for nominations for the Chairman of Federal Council. Dr. E. W. Turton, previously Vice-Chairman of Council, was elected. Dr. Turton thanked the Council for the confidence shown in him by electing him Chairman of

Federal Council, and he expressed the wish that every member of the Council would assist him in an attempt to conduct the business of the Association on as high and responsible a level as possible.

Following are *some* of the other appointments that were made and committees that were elected:

Vice-Chairman of Federal Council: Dr. R. Schaffer
President-Elect of the Medical Association: Mr. J. A. Currie
Honorary Treasurer: Mr. J. D. Joubert
Secretary of Federal Council: Dr. A. H. Tonkin, with the Associate Secretary and the Assistant Secretary as his deputies.

Members of the Executive Committee: Mr. B. A. Armitage, Mr. J. A. Currie, Drs. A. L. Agranat, R. Theron, W. H. Lawrance, and Drs. J. H. Struthers and D. S. Chapman *ex officio*.

Members of the Head Office and Journal Committee: Mr. J. A. Currie, Drs. A. W. S. Sichel, J. C. Coetzee, F. E. Hofmeyr, Mr. R. D. H. Baigrie, and Mr. J. D. Joubert (*ex officio*).

*Medical Aid*

Federal Council devoted an appreciable part of its time to a debate on the vexed problem of the policy of the Association in connection with medical aid, including medical aid societies, insurance company medical aid, and the Medical Services Plan.

*Medical aid societies.* With reference to medical aid societies, Federal Council took the following decision: 'Following the notices of motion given at the Council meeting in September 1959, the rules regarding members of approved medical aid societies to have an income ceiling of £2,500 and that not more than 3% of members may earn more than £1,750, be rescinded, but that the average income of £1,100 for medical aid societies remain'.

*Insurance company medical aid.* The essence of the policy of Federal Council regarding medical aid societies administered by insurance companies is summarized in an Official Announcement which was published in the *Journal* of 29 October on page 924. This announcement included the advice given to members on what to do with the coded cheques which are being issued by the South African Mutual Medical Aid Society.

*The Medical Services Plan* was discussed with reference to the Chairman's report to the first Annual General Meeting of members of the Plan. This report was also published in the issue of the *Journal* for 29 October on page 936. Dr. M. Shapiro was congratulated on the progress of the Plan. He was not able to make any definite statement on the possibility of extension of the Plan to other parts of the country because this, he pointed out, will have to be reconsidered by the Board in the light of the decision taken by Federal Council regarding its policy on medical aid in general.

The minutes of this meeting of Federal Council will be published in the *Journal* in due course, and will reflect details of all the other matters discussed.

## IN DIE VERBYGAAN : PASSING EVENTS

*Research Forum, University of Cape Town.* The next meeting of Research Forum will be held on Wednesday 16 November at 12 noon in the Bennie de Wet Lecture Theatre, A-floor, Groote Schuur Hospital, Observatory, Cape. Dr. J. A. H. Campbell will speak on 'The effect of adrenalectomy on non-dietary cirrhosis in rats'. All who are interested are invited to attend this lecture.

* * *

*College of General Practitioners, Cape of Good Hope Faculty* — Upjohn Travelling Lecture. Drs. P. A. Rens and L. Slabbert are arranging a clinical meeting and lectures at the Paarl General Hospital, by kind permission of the Superintendent, on 26 November. Details can be obtained from the organizers or from the Secretary, College of General Practitioners, P.O. Box 643, Cape Town, telephone 3-2022.

* * *

*South African Cancer Bulletin.* Medical practitioners who do not already receive the *South African Cancer Bulletin* and who wish to be put on the mailing list for this quarterly publication, should send a request to have their names placed on the mailing list to: *South African Cancer Bulletin*, P.O. Box 1010, Johannesburg. All addresses should be typewritten or printed clearly in block capitals.

This Bulletin is issued without charge to members of the medical profession.

* * *

*South African Institute for Medical Research, Johannesburg, Staff Scientific Meeting.* The next meeting wil be held on Monday 21 November at 5.10 p.m. in the Institute Lecture Theatre. Dr. Paul Weinbren, of the Arthropod-borne Virus Research Unit, will speak on 'Some aspects of the unusual natural history of an important arthropod-borne virus vector' and will illustrate his talk with a ciné film.

* * *

*Dr. Bernard Moshal,* M.A., M.D. (Dubl.), M.R.C.P. (Irel.), M.R.C.P. (Lond.), has returned after an extended visit overseas and has resumed practice as a specialist physician at 32 Medical Centre, Field Street, Durban. Telephone 25079 .

## NUWE PREPARATE EN TOESTELLE : NEW PREPARATIONS AND APPLIANCES

### CENSEDAL

Maybaker (S.A.) (Pty.) Ltd. announce the introduction of Censedal brand allyl neopentyl barbituric acid and supply the following information:

Clinical studies have confirmed that Censedal is a useful daytime sedative which, in therapeutic doses, seldom produces drowsiness. It is rapidly absorbed after oral administration and has a duration of action between that of amylobarbitone and that of phenobarbitone.

Censedal is indicated for sedation in anxiety, tension, phobic states, and in senile agitation. It is not, however, effective against agitation or anxiety in psychotic patients and is not an effective anticonvulsant in epilepsy.

Censedal is presented as white, scored tablets each containing 60 mg. (approx. 1 gr.) and 200 mg. (approx. 3 gr.) of the active compound.

Further particulars may be obtained from the Medical Department, Maybaker (S.A.) (Pty.) Ltd., P.O. Box 1130, Port Elizabeth. See also advertisement on p. xv.

### OTOBIONE

White Laboratories Inc., introduce Otobione, an anti-inflammatory and anti-microbial liquid intended for topical treatment of accessible ear infections, and supply the following information:

Each c.c. of Otobione contains: prednisolone acetate 5 mg., neomycin (from sulphate) 3·5 mg., and sodium propionate 50 mg.

Otobione is buffered approximately to pH 6·2 to conform to that of the normal external ear canal. The formulation is designed to promote an optimal degree of local action with minimal distortion of otoscopic landmarks.

Otobione is indicated for topical treatment and symptomatic relief of external otitis and chronic otitis media due to susceptible organisms. Used prophylactically, Otobione also helps to prevent infectious complications in allergic, seborrhoeic or neurogenic dermatoses of the external auditory canal.

Otobione is supplied in bottles of 5 c.c. sterile ear solution with cellophane-wrapped sterile dropper.

Further information may be obtained from Scherag (Pty.) Ltd., P.O. Box 7539, Johannesburg.

# BRIEWERUBRIEK : CORRESPONDENCE

## REFUSAL OF RECOGNITION OF MEDICAL AID SOCIETIES

*To the Editor:* May I, through the medium of our esteemed *Journal*, take this unprecedented, and I hope exemplary step, of notifying *all* medical aid societies, medical benefit societies, and similar organizations, of my decision not to recognize *any* of their members entitled to preferential treatment *or* tariffs. All such members will be treated as *private* patients, will be charged the local private fees or a lower fee if the circumstances warrant such action.

This decision has been taken after studying the relevant correspondence in the *Journal* and deliberate consideration.

Although not required to furnish reasons, I may mention the following precipitating facts:

1. All services rendered by organized labour of commerce and industry to the medical profession are not based on a preferential or reciprocal basis.

2. Only the medical profession is subjected to this organized 'socialism'; why subsidize socialism?

3. Many of my colleagues feel the way I do, but may only require initiative example to eradicate the humiliating and throttling stranglehold these organizations are gradually exercising.

4. Being a member of the Medical Association of South Africa does not prohibit me from considering *all* patients entitled to equal treatment *and* fees; subject only to rules concerning professional conduct as stipulated by the South African Medical and Dental Council

The following notice is prominently exhibited in my waiting room: 'Members of SANSOM or any other sick fund or organization will be treated as private patients and must settle their accounts here. Receipts will be issued for these and may be used to claim from their organizations'.

J. A. Dieperink

P.O. Box 24
Paul-Roux, O.F.S.
26 October 1960

## ABOLITION OF THE TARIFF OF FEES FOR APPROVED MEDICAL AID SOCIETIES

*To the Editor: Observer's* letter,[1] published in the *Journal* of 24 September, has stated factually and in commendably simple terms some of the difficulties of which we, who take part in negotiations with the Association, in addition to the practical running of medical aid societies, are only too well aware.

Recent history does however indicate that the bringing together of two such diverse bodies as Federal Council and the Advisory Council of Medical Aid Societies, each with common interests, will tend to increase mutual trust and cooperation, which in its turn will undoubtedly overcome difficulty and dissatisfaction. We therefore venture to suggest to your correspondent that in time the very points enumerated by him as supporting his tariff-abolition contention will be successfully dealt with. In many ways it is a matter for regret that the members of Federal Council do not meet the Advisory Council more often. The long gaps between meetings do not help to solve differences of opinion in tariff application and principle, nor do changes in the personnel of the responsible Committee appointed by Federal Council to conduct its negotiations. But by and large, a great sense of oneness has been growing in the direction of encouraging the growth of the present medical aid society system as *the* answer to a state medical service, and it would be a tremendous loss at this stage to abolish this, despite the recent halt to progress caused by the irruption of public insurance schemes — which are not true medical aid societies in the understood sense of the term.

It is probable that the approved societies handle over half a million claims a year and of this large number only a tiny fraction call for any question from either side. Has *Observer* consulted with his colleagues (assuming he is a member of the Association) on the practical results of the abolition of direct payment by the society to the doctor? To begin with, each society would benefit greatly in the reduction of overhead expenses such as postages, cheque forms, stationery, salaries, etc. for it will issue *one* cheque to its member in settlement of a claim which might cover the fees of several practitioners.

The position will then arise of the patient, after a long and perhaps serious illness, having to set about paying on his own account — a long delay taking place often before everything is settled. Then will follow the wholesale desire of secretaries and accountants in surgeries and consulting rooms all over the country for a reversion to the original system and the history of the 1930s will be repeated. But by that time the erstwhile medical aid population of the Union may have opted for a state scheme to replace the one which had served them so well and for so long and which the Association had abolished.

*The Cape Association of Medical Aid Societies*

P.O. Box 1242
Cape Town
31 October 1960

1. Correspondence (1960): S. Afr. Med. J., **34**, 840.

## COLLAPSE AFTER DRUG THERAPY

*To the Editor:* I read with interest the column 'Questions Answered',[1] in the issue of the *Journal* for 15 October. I was surprised at a few statements there-in.

Many practitioners (including myself) have used drugs without troubling to delve fully into their pharmacological actions — a dangerous procedure indeed.

Both 'pethidine' and 'largactil' are known to affect the blood-pressure profoundly, both by a central action and by acting on the smooth musculature of blood vessels. It is reasonable and logical to assume that these drugs given together should have a synergistic effect. In my experience this is definitely so. As little as 10 mg. of 'pethidine', 'largactil' and 'phenergan' (the so-called lytic 'cocktail') given intravenously, well diluted and slowly, during surgical operations have caused a profound fall in blood-pressure, with accompanying respiratory depression, etc. This has necessitated heroic measures post-operatively. The danger of coronary thrombosis in the elderly is here very real indeed.

In the column 'Questions Answered' it is submitted that nor-adrenaline can be used as a means of combating the resulting hypotension. As a house procedure? I would not recommend any physician to use nor-adrenaline unless he is well versed in its method of administration and in its potent pharmacological actions.

It is further stated that intravenous pethidine may cause a fall in blood pressure and 'precipitate an asthmatic attack'. Respiratory depression and an obstructed airway may simulate asthma, but to my knowledge pethidine, having a papaverine-like action on smooth muscle, is most unlikely to produce asthma. Indeed it is very often the drug of choice (used intravenously) in breaking an attack of status asthmaticus or relieving bronchospasm in the anaesthetized patient. Its action here is rapid, dramatic, and sure.

It may be worth remembering that when potent drugs are given intravenously it is often wise to give them slowly and well diluted.

My experience as an anaesthetist has taught me to respect all drugs profoundly, particularly when they are given intravenously.

In my branch of our profession one has the time and the facilities for studying the action of many drugs. Hence my criticism, which is I trust, constructive.

Arnold Rieck
*Senior Anaesthetist*

Krugersdorp Hospital
Krugersdorp, Tvl.
27 October 1960

1. Questions Answered (1960): S. Afr. Med. J., **34**, 896.

## GENEESHERE VIR SENDINGVELDE

*Aan die Redakteur:* Die Nederduitse Gereformeerde Kerk in Suidwes-Afrika het twee Christen-geneeshere nodig vir ons sendingvelde. Die salaris is £1,760×£60—£2,000 (alles ingesluit en regeringstoelae bygereken) plus vry vervoer na, en ook vry vervoer in die sendingveld, waar in verband met die sendingwerk gereis word.

Dan het ons ook 'n paar verpleegsters nodig. Die salaris varieer ooreenkomstig kwalifikasies, maar dit is rondom £50 per maand en selfs hoër. Dit gaan tot ± £70 per maand.

Sal u dit tog asseblief in u *Tydskrif* bekendstel en persone wat belang stel vra om met my in verbinding te tree?

Fanan van der Spuy
*Sendingsekretaris*

Ned. Geref. Kerk in Suidwes-Afrika
Posbus 389
Windhoek
24 Oktober 1960

## URETERIC INJURIES IN GYNAECOLOGY

*To the Editor:* May I congratulate Dr. Jacobson[1] on his excellent paper dealing with ureteric injuries in gynaecology. However, I read it with no small feeling of remorse, in that it did not come from the pen of a gynaecologist. Surely, it is a reflection on us and those responsible for the training of gynaecologists in this country and in the United Kingdom that our urological colleagues should have to point out to us the precautions we must take to prevent and recognize urinary-tract injuries after we have been the cause of them, and worse still that the correction of our mistakes must be left in their hands.

Is the time not long overdue when trainee gynaecologists should be taught to be fully *au fait* in the use of the cystoscope and female urological surgery? I would suggest that part of their training period be spent doing urology, not in a urological unit as such where mainly male urology is carried out, but in a gynaecological unit undertaking female urology.

The title of 'gynaecological surgeon' should be discarded and replaced by 'pelvic surgeon', a doctor who should be fully acquainted with urological and bowel surgery.

D. K. Quinlan

819 Colonial Mutual Life Buildings
West Street
Durban
28 October 1960

1. Jacobson, I. (1960): S. Afr. Med. J., **34**, 901.

## 43rd MEDICAL CONGRESS (M.A.S.A.), CAPE TOWN, 24 – 30 SEPTEMBER 1961 : 43ste MEDIESE KONGRES (M.V.S.A.), KAAPSTAD, 24 - 30 SEPTEMBER 1961

### INTENTION FORM

Please complete and return *without delay* to the Hon. Organizing Secretary, Congress Office, 43rd South African Medical Congress, P.O. Box 643, Cape Town.

[Please cut here]

1. Do you wish to attend the 43rd South African Medical Congress in Cape Town? .....
*2. Will you be accompanied by your wife/husband?
*3. How will you travel to Congress? Motor/train/aeroplane
4. Will you be attending the Banquet? .....
5. Will you be attending the Ball? .....
6. Which sport, if any, will you be taking part in? .....

NAME: .....
(In block letters)

ADDRESS: .....

* Delete whichever is not applicable.

### VOORNEMENSVORM

Voltooi en stuur asseblief, *sonder versuim*, terug aan die Organiserende Ere-Sekretaris, Kongreskantoor, 43ste Suid-Afrikaanse Mediese Kongres, Posbus 643, Kaapstad.

[Sny hier af]

1. Is u van plan om die 43ste Suid-Afrikaanse Mediese Kongres in Kaapstad by te woon? .....
*2. Sal u vrou/man u vergesel?
*3. Hoe sal u na die Kongres toe kom? Motor/trein/vliegtuig
4. Sal u die Banket bywoon? .....
5. Sal u die Bal bywoon? .....
6. Aan welke sportsoort, indien enige, meen u om deel te neem? .....

NAAM: .....
(In hoofletters)

ADRES: .....

* Krap uit wat nie toepaslik is nie.